

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1 Ceres	3.34 ^m	0.12	309.49408	73.02370	80.30889	10.59321	0.0756074	0.21408881	2.7674094	17	—	—
2 Pallas	4.13	0.11	291.65134	309.99157	173.08718	34.83791	0.2305975	0.21343186	2.7730852	17	11 9.2	8.2
3 Juno	5.33	0.32	259.23488	248.20649	169.85831	12.98996	0.2568534	0.22609744	2.6685312	17	7 1.4	9.8
4 Vesta	3.20	0.32	292.71029	150.94298	103.83595	7.14002	0.0891526	0.27154736	2.3617776	17	1 18.5	6.2
5 Astraea	6.85	X	139.06219	358.75688	141.58350	5.36795	0.1914650	0.23876583	2.5732852	17	7 1.7	10.9
6 Hebe	5.71	0.24	289.56750	239.86061	138.64806	14.73750	0.2028017	0.26101122	2.4249154	17	6 17.6	9.2
7 Iris	5.51	X	339.84949	145.31456	259.56446	5.52317	0.2314412	0.26745922	2.3857833	17	10 27.5	7.0
8 Flora	6.49	0.28	13.76132	285.31023	110.90091	5.88653	0.1570288	0.30175474	2.2014052	17	—	—
9 Metis	6.28	0.17	116.70274	6.19947	68.91716	5.57497	0.1221133	0.26721496	2.3872370	17	2 25.2	9.1
10 Hygiea	5.43	X	46.19231	312.03846	283.21831	3.83202	0.1126909	0.17714743	3.1398782	17	6 29.8	9.2
11 Parthenope	6.55	X	124.59808	195.86572	125.55909	4.62978	0.1004695	0.25662305	2.4524807	17	—	—
12 Victoria	7.24	0.22	327.56810	69.58757	235.41140	8.37309	0.2200040	0.27640728	2.3340119	17	4 17.6	9.9
13 Egeria	6.74	X	44.59876	80.55480	43.23684	16.54021	0.0837755	0.23826812	2.5768675	17	1 12.3	10.1
14 Irene	6.30	X	22.51865	98.04174	86.12942	9.11946	0.1668154	0.23691535	2.5866673	17	2 23.6	9.0
15 Eunomia	5.28	0.23	146.65038	97.75734	293.14092	11.73274	0.1866984	0.22912807	2.6449482	17	2 17.1	9.2
16 Psyche	5.90	0.20	171.49754	227.54643	150.26286	3.09754	0.1348585	0.19695092	2.9257062	17	3 3.6	10.4
17 Thetis	7.76	X	151.15647	136.12592	125.55727	5.59027	0.1326381	0.25372492	2.4711207	17	12 11.2	11.7
18 Melpomene	6.51	0.25	97.35491	227.82060	150.46694	10.13363	0.2188296	0.28347150	2.2950727	17	—	—
19 Fortuna	7.13	0.10	42.30273	182.09786	211.14264	1.57388	0.1587424	0.25829766	2.4418692	17	—	—
20 Massalia	6.50	0.25	319.73347	256.57365	206.10271	0.70861	0.1423646	0.26357338	2.4091750	17	12 17.7	8.6
21 Lutetia	7.35	0.11	188.66203	249.98867	80.87819	3.06372	0.1644786	0.25947881	2.4344533	17	1 12.2	11.0
22 Kalliope	6.45	0.21	78.81679	354.93854	66.06542	13.71671	0.0991026	0.19858872	2.9095981	17	—	—
23 Thalia	6.95	X	196.75791	60.70116	66.85107	10.11430	0.2353094	0.23175118	2.6249522	17	8 9.9	11.6
24 Themis	7.08	0.19	248.85633	106.88530	35.94318	0.75196	0.1251912	0.17736258	3.1373385	17	10 19.9	11.7
25 Phocaea	7.83	X	13.89065	90.24526	214.13697	21.60617	0.2542670	0.26506433	2.4001323	17	7 29.8	10.1
26 Proserpina	7.5	X	328.78100	193.69541	45.78174	3.56403	0.0907931	0.22773040	2.6557593	17	2 24.4	11.0
27 Euterpe	7.0	X	170.66008	356.55127	94.78858	1.58371	0.1731022	0.27424205	2.3462810	17	5 25.8	10.6
28 Bellona	7.09	X	145.38515	344.22665	144.30094	9.43119	0.1521478	0.21323829	2.7747632	17	6 21.8	11.5
29 Amphitrite	5.85	0.20	140.09534	62.68416	356.41596	6.08622	0.0717728	0.24116721	2.5561747	17	3 4.3	9.2
30 Urania	7.57	X	226.53026	87.40494	307.48486	2.09552	0.1272465	0.27091877	2.3654294	17	5 5.4	11.2
31 Euphrosyne	6.74	X	341.67905	61.42537	31.11869	26.30538	0.2213018	0.17578492	3.1560822	17	12 24.3	10.5
32 Pomona	7.56	X	250.04862	339.32665	220.44049	5.52460	0.0803909	0.23676453	2.5877657	17	—	—
33 Polyhymnia	8.55	0.33	220.93226	338.16541	8.63959	1.86282	0.3336261	0.20229137	2.8739849	17	3 10.4	13.8
34 Circe	8.51	X	352.42477	330.77100	184.42292	5.49903	0.1046325	0.22377063	2.6869979	17	—	—
35 Leukothea	8.5	X	101.18629	213.29647	353.75005	7.93624	0.2260159	0.19037238	2.9927247	17	8 24.7	13.1
36 Atalante	8.46	X	170.25096	47.41361	358.35857	18.38885	0.3033533	0.21597112	2.7513062	17	4 7.4	13.4
37 Fides	7.29	0.24	203.71219	62.92960	7.27294	3.07121	0.1753628	0.22955242	2.6416877	17	6 1.8	11.6
38 Leda	8.32	X	234.40977	169.41524	295.73624	6.97105	0.1552242	0.21742276	2.7390464	17	8 14.7	12.7
39 Laetitia	6.0	X	174.08201	208.35301	157.11200	10.37756	0.1128988	0.21383214	2.7696235	17	2 13.4	10.2
40 Harmonia	7.0	X	294.12129	269.92003	94.19273	4.25727	0.0467365	0.28876413	2.2669427	17	6 23.5	9.7
41 Daphne	7.12	0.10	5.40049	45.86313	178.09056	15.79472	0.2757893	0.21489399	2.7604923	17	3 6.4	9.9
42 Isis	7.53	X	48.42854	237.35571	84.19678	8.51359	0.2224174	0.25818709	2.4425664	17	11 18.7	10.4
43 Ariadne	7.93	0.11	317.22189	16.17034	264.81860	3.47072	0.1684456	0.30132733	2.2034864	17	3 3.6	10.8
44 Nysa	7.03	0.46	286.02800	343.24162	131.55560	3.70644	0.1481884	0.26121483	2.4236551	17	11 4.9	9.6
45 Eugenia	7.46	0.07	265.97506	88.75658	147.67136	6.60399	0.0839950	0.21976462	2.7195530	17	—	—
46 Hestia	8.36	0.06	282.57527	177.39315	181.09190	2.34979	0.1717189	0.24559444	2.5253623	17	5 17.8	11.8
47 Aglaja	7.84	0.16	291.61408	314.40708	3.09915	4.97617	0.1299469	0.20140952	2.8823677	17	4 15.4	12.1
48 Doris	6.90	X	321.34097	253.32444	183.56465	6.54719	0.0728367	0.17956082	3.1116805	17	11 9.7	11.0
49 Pales	7.8	X	133.71614	110.65603	285.87715	3.17047	0.2263957	0.18086647	3.0966872	17	2 27.5	12.5
50 Virginia	9.24	X	21.21592	200.16675	173.53142	2.83798	0.2859824	0.22848401	2.6499164	17	12 21.4	12.0
51 Nemausa	7.35	0.08	293.48940	2.59811	176.01643	9.98018	0.0669167	0.27094055	2.3653026	17	—	—
52 Europa	6.31	0.18	128.20163	343.81186	128.61976	7.47680	0.1098866	0.18105887	3.0944930	17	5 14.5	10.9
53 Kalyppo	8.81	X	284.63738	313.30718	143.56085	5.17107	0.2058646	0.23275283	2.6174159	17	9 27.9	12.0
54 Alexandra	7.66	X	245.74782	345.06260	313.32653	11.79946	0.1981118	0.22090213	2.7102090	17	1 30.9	12.2
55 Pandora	7.7	X	232.29106	5.10870	10.40092	7.18149	0.1425409	0.21482476	2.7610853	17	4 22.3	12.1
56 Melete	8.31	X	105.15336	105.03067	192.99511	8.08042	0.2375499	0.23551824	2.5968868	17	12 17.2	12.7
57 Mnemosyne	7.03	X	37.20605	210.89611	199.20206	15.21574	0.1138947	0.17614040	3.1518345	17	—	—
58 Concordia	8.86	X	165.66266	30.36043	161.12156	5.06547	0.0430107	0.22210614	2.7004056	17	9 26.9	12.6
59 Elpis	7.93	X	26.53941	211.29595	170.03308	8.64091	0.1193392	0.22056666	2.7129563	17	12 14.1	11.3
60 Echo	8.21	0.27	48.89519	271.02756	191.59550	3.60155	0.1832494	0.26625344	2.3929809	17	—	—
61 Danaë	7.68	X	157.10760	12.69473	333.72365	18.21182	0.1669747	0.19140911	2.9819085	17	1 19.9	12.4
62 Erato	8.76	X	135.27519	274.56532	125.54551	2.22910	0.1702356	0.17786746	3.1313988	17	3 1.3	13.4
63 Ausonia	7.55	0.25	340.16089	295.78487	337.74607	5.77631	0.1269882	0.26589742	2.3951165	17	4 9.0	10.2
64 Angelina	7.67	0.48	264.07607	178.76006	309.13710	1.30942	0.1259165	0.22438762	2.6820700	17	10 21.1	11.2
65 Cybele	6.62	0.01	168.06053	102.37249	155.62907	3.56274	0.1114057	0.15527041	3.4282850	17	12 13.3	12.0
66 Maja	9.36	X	241.55795	44.07111	7.50726	3.04610	0.1727165	0.22908858	2.6452522	17	6 13.7	13.6
67 Asia	8.28	X	121.44752	107.11338	202.44239	6.03042	0.1851285	0.26155559	2.4215497	17	—	—
68 Leto	6.78	0.05	133.83749	304.74139	44.12790	7.97209	0.1870734	0.21259107	2.7803921	17	—	—
69 Hesperia	7.05	0.19	185.72867	289.34070	184.99640	8.59280	0.1706096	0.19205354	2.9752342	17	7 12.4	12.1
70 Panopaea	8.11	0.14	290.81911	255.25087	47.69629	11.59473	0.1807876	0.23282865	2.6168476	17	3 22.2	12.1
71 Niobe	7.30	0.40	134.99840	266.84471	316.02939	23.26055	0.1733590	0.21533130	2.7567536	17	9 25.6	12.0
72 Feronia	8.94	X	193.38561	102.95395	207.97246	5.41695	0.1211716	0.28897986	2.2658144	17	—	—
73 Klytia	8.9	X	20.42706	52.62910	7.02953	2.37061	0.0434641	0.22660454	2.6645486	17	—	—
74 Galatea	8.66	X	147.63258	174.18836	197.26729	4.07812	0.2392379	0.21278832	2.7786736	17	2 6.6	12.9
75 Eurydike	8.96	0.23	186.53117	339.36813	359.42617	5.00037	0.3051030	0.22562899	2.6722235	17	2 5.4	13.8
76 Freia	7.90	X	190.07387	252.57610	204.30737	2.12179	0.1659089	0.15644080	3.4111648	17	6 28.1	13.4
77 Frigga	8.52	0.16	148.10118	61.43063	1.25851	2.42501	0.1309455	0.22574504	2.6713076	17	3 28.4	12.2
78 Diana	8.09	0.08	178.64970	152.85248	333.40952	8.70337	0.2076785	0.23261217	2.6184710	17	7 22.9	12.6
79 Eurynome	7.96	0.25	74.56936	200.78377	206.61877	4.61759	0.1910766	0.25789662	2.4444000	17	—	—
80 Sappho	7.98	X	287.26011	139.66226	218.69879	8.67581						

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
81 Terpsichore	8.48 ^m	X	224.41884	51.70658	0.96636	7.80364	0.2103290	0.20451745	2.8530922	17	5 29.1	13.4
82 Alkmene	8.40	0.28	46.75775	111.43714	25.50400	2.82855	0.2190628	0.21428868	2.7656883	17	2 11.2	10.7
83 Beatrix	8.66	X	73.89712	168.41235	27.73708	4.96474	0.0818847	0.25993740	2.4315892	17	6 3.9	11.5
84 Klio	9.32	X	304.46139	15.13979	327.52668	9.31504	0.2356030	0.27145798	2.3622960	17	5 5.5	12.8
85 Io	7.61	X	83.67748	123.11169	203.11972	11.96150	0.1941210	0.22809792	2.6529058	17	12 25.8	11.8
86 Semele	8.54	X	243.84094	308.90931	86.09845	4.82043	0.2144247	0.18001945	3.1063933	17	5 28.0	13.5
87 Sylvia	6.94	X	1.86505	263.52912	73.05049	10.87662	0.0925657	0.15174147	3.4812337	17	9 6.4	11.6
88 Thisbe	7.04	0.14	281.04434	35.98224	276.49517	5.21050	0.1621196	0.21368592	2.7708867	17	3 20.8	11.3
89 Julia	6.60	0.15	352.19084	45.45983	311.56004	16.12704	0.1845074	0.24197783	2.5504629	17	9 2.9	9.1
90 Antiope	8.27	X	39.43550	244.88473	69.97054	2.20709	0.1656524	0.17628788	3.1500764	17	10 10.6	12.1
91 Aegina	8.84	X	26.42062	72.73587	10.65663	2.10645	0.1061289	0.23650440	2.5896629	17	—	—
92 Undina	6.61	X	75.48817	239.38257	101.57667	9.92967	0.1040627	0.17317415	3.1877237	17	12 18.7	11.2
93 Minerva	7.9	X	348.01087	274.64276	4.05400	8.55856	0.1390614	0.21549770	2.7553342	17	5 8.5	11.1
94 Aurora	7.57	X	203.22248	60.59881	2.58030	7.97133	0.0935624	0.17577008	3.1562598	17	5 27.9	12.5
95 Arethusa	8.0	X	323.77834	154.08223	243.02990	12.99456	0.1525183	0.18362141	3.0656354	17	9 7.4	12.0
96 Aegle	7.67	X	352.97956	208.93500	321.62090	15.96806	0.1395143	0.18496176	3.0508071	17	1 8.2	11.7
97 Klotho	7.63	X	175.32996	268.65983	159.65334	11.77598	0.2564028	0.22595949	2.6696172	17	5 12.8	12.4
98 Ianthé	8.84	X	351.40161	158.76820	353.99597	15.57766	0.1858144	0.22367848	2.6877358	17	—	—
99 Dike	9.43	X	108.71350	195.49613	41.52742	13.84878	0.1949586	0.22644628	2.6657899	17	10 8.2	13.6
100 Hekate	7.67	X	137.35043	184.64029	127.18963	6.43028	0.1686651	0.18157991	3.0885705	17	—	—
101 Helena	8.33	0.35	330.91350	348.32560	343.40209	10.19562	0.1398874	0.23739621	2.5831732	17	6 24.9	11.4
102 Miriam	9.26	X	114.81532	147.19219	210.85674	5.17852	0.2528903	0.22714721	2.6603031	17	—	—
103 Hera	7.66	X	222.29080	188.21650	136.17819	5.41800	0.0806030	0.22184000	2.7025650	17	2 10.5	11.6
104 Klymene	8.27	X	172.29570	31.81115	41.69164	2.79067	0.1596327	0.17653657	3.1471172	17	5 13.7	13.4
105 Artemis	8.57	0.10	4.82675	56.93493	188.26113	21.44361	0.1775533	0.26953862	2.3734972	17	4 4.9	10.7
106 Dione	7.41	X	121.12298	329.85588	62.15471	4.59717	0.1661510	0.17416151	3.1756644	17	2 5.7	12.0
107 Camilla	7.08	0.08	235.60086	306.86376	172.61089	10.00214	0.0657354	0.15112702	3.4906634	17	9 13.1	12.3
108 Hecuba	8.09	X	233.98207	204.91745	350.00430	4.21973	0.0556071	0.16910737	3.2386277	17	12 11.5	12.9
109 Felicitas	8.75	0.04	119.36267	56.62505	3.15604	7.87414	0.2968830	0.22216065	2.6999639	17	3 15.7	12.6
110 Lydia	7.80	0.20	75.71512	283.38802	56.86683	5.96489	0.0811460	0.21819306	2.7325960	17	12 20.1	11.6
111 Ate	8.02	X	285.02925	166.37247	305.74821	4.93082	0.1030770	0.23590655	2.5940363	17	10 31.6	11.4
112 Iphigenia	9.84	X	273.33747	17.12043	323.43732	2.59899	0.1275399	0.25954038	2.4340683	17	4 15.0	13.4
113 Amalthea	8.74	0.35	334.13894	79.12196	123.48207	5.04211	0.0868687	0.26909441	2.3761085	17	1 1.1	11.6
114 Cassandra	8.26	X	286.86898	352.29038	164.21884	4.93647	0.1352144	0.22490361	2.6779663	17	12 28.2	11.5
115 Thyra	7.51	0.12	215.60193	97.12983	308.80843	11.59167	0.1927513	0.26851634	2.3795175	17	5 5.0	11.7
116 Sirona	7.82	X	93.54397	94.62554	63.70958	3.56447	0.1423989	0.21427645	2.7657935	17	5 28.3	11.2
117 Lomia	7.95	X	34.00828	52.09166	348.78358	14.90087	0.0278638	0.19049016	2.9914909	17	—	—
118 Peitho	9.14	X	154.62632	33.45718	47.68355	7.74619	0.1640198	0.25901628	2.4373507	17	4 27.6	12.6
119 Althaea	8.42	X	209.07440	170.73934	203.65866	5.78639	0.0801027	0.23741332	2.5830491	17	3 26.6	12.3
120 Lachesis	7.75	X	127.41677	233.21128	341.19605	6.96337	0.0524780	0.17894586	3.1188054	17	9 9.8	12.3
121 Hermione	7.31	X	126.24651	298.19121	73.13060	7.59752	0.1333947	0.15399831	3.4471387	17	1 18.4	12.3
122 Gerda	7.87	X	231.63705	321.66817	178.13553	1.64021	0.0321333	0.17016865	3.2251482	17	10 7.6	12.4
123 Brunhild	8.9	X	186.02156	125.88234	307.74072	6.41350	0.1201624	0.22281248	2.6946956	17	5 19.1	13.1
124 Alkeste	8.11	0.19	76.05147	61.58060	187.99095	2.95730	0.0754477	0.23103555	2.6303700	17	8 24.2	11.6
125 Liberatrix	9.04	0.33	34.53428	109.49976	169.00268	4.66403	0.0775769	0.21689199	2.7435131	17	8 1.9	12.3
126 Velleda	9.27	X	45.72591	328.38717	23.31796	2.92476	0.1063722	0.25872658	2.4391697	17	12 5.0	12.1
127 Johanna	8.6	X	154.58343	94.02972	31.15354	8.24581	0.0671703	0.21561080	2.7543706	17	6 18.9	12.7
128 Nemesis	7.49	X	302.20621	303.86375	76.24531	6.24539	0.1271280	0.21621239	2.7492590	17	7 22.3	11.0
129 Antigone	7.07	0.33	178.38137	111.11104	135.68863	12.26203	0.2116926	0.20270649	2.8700598	17	12 12.7	12.1
130 Elektra	7.12	X	199.45213	236.85487	145.19733	22.77236	0.2080341	0.17797230	3.1301690	17	4 13.0	12.8
131 Vala	10.03	X	33.58041	160.25694	65.66013	4.96144	0.0678086	0.25994245	2.4315577	17	5 11.0	12.6
132 Aethra	9.38	X	131.94917	255.21409	258.40500	24.99577	0.3901758	0.23413213	2.6071261	17	7 20.4	14.5
133 Cyrene	7.98	0.13	29.59344	289.78197	319.03241	7.21480	0.1356006	0.18391560	3.0623653	17	6 21.4	11.6
134 Sophrosyne	8.76	0.28	326.05631	84.60050	345.98623	11.60055	0.1168868	0.24013138	2.5635204	17	11 5.3	11.7
135 Hertha	8.23	X	181.71350	340.20481	343.64902	2.30574	0.2078061	0.26060926	2.4274082	17	—	—
136 Austria	9.69	X	45.80723	132.96596	186.46292	9.57904	0.0848732	0.28498459	2.2869419	17	10 22.4	12.2
137 Meliboea	8.05	X	292.36054	107.04300	202.22920	13.43324	0.2124841	0.17829293	3.1264150	17	3 30.5	12.7
138 Tolosa	8.75	X	91.17012	260.80438	54.75955	3.20386	0.1624625	0.25715509	2.4490969	17	12 21.1	12.4
139 Juewa	7.78	X	145.27821	165.59999	1.83472	10.91243	0.1753079	0.21250694	2.7811258	17	8 15.2	12.3
140 Siwa	8.34	X	287.98561	196.59678	107.20265	3.18467	0.2145803	0.21787030	2.7352941	17	3 15.2	12.6
141 Lumen	8.4	X	23.12806	58.06052	318.50020	11.89539	0.2148643	0.22649872	2.6653785	17	12 16.8	11.5
142 Polana	10.27	X	245.64216	292.09153	291.24839	2.23828	0.1347821	0.26206870	2.4183878	17	—	—
143 Adria	9.12	X	311.40524	253.17601	333.06703	11.44717	0.0744999	0.21483667	2.7609833	17	1 23.2	13.0
144 Vibia	7.91	0.17	230.96445	294.35810	76.20439	4.81232	0.2341878	0.22753490	2.6572803	17	4 14.0	12.5
145 Adeona	8.13	X	323.84996	44.05957	77.41213	12.63481	0.1442527	0.22549584	2.6732753	17	—	—
146 Lucina	8.20	0.11	286.08520	147.01275	83.96847	13.09555	0.0670184	0.22000206	2.7175959	17	—	—
147 Protogeneia	8.8	X	164.33667	100.31359	248.35428	1.93099	0.0278358	0.17755487	3.1350730	17	1 14.3	13.3
148 Gallia	7.63	X	235.84767	252.76637	145.01567	25.28921	0.1866977	0.21366850	2.7710373	17	5 29.1	12.7
149 Medusa	10.79	X	43.71887	250.49346	159.61708	0.93935	0.0652665	0.30735989	2.1745593	17	—	—
150 Nuwa	8.23	X	213.84169	152.38982	206.13963	2.19914	0.1238481	0.19079995	2.9882520	17	3 20.2	12.9
151 Abundantia	9.1	X	236.07621	131.18804	38.86975	6.43499	0.0334569	0.23612668	2.5924239	17	11 23.1	12.5
152 Atala	8.33	X	123.27694	59.75461	39.91144	12.12644	0.0792325	0.17699314	3.1417028	17	4 18.6	12.7
153 Hilda	7.48	X	101.24171	38.72114	228.14955	7.82594	0.1399613	0.12415708	3.9794379	17	10 20.9	13.4
154 Bertha	7.58	X	193.78625	159.91926	36.74049	20.97361	0.0771458	0.17237730	3.1975401	17	10 30.4	12.4
155 Scylla	11.39	X	319.84778	45.84355	40.99468	11.38818	0.2774797	0.21536568	2.7564601	17	11 1.3	13.8
156 Xanthippe	8.64	X	350.43208	338.34854	241.83080	9.78006	0.2276313	0.21874681	2.7279824	17	2 5.4	12.2
157 Dejanira	11.2	X	47.13395	46.34935	62.06736	12.16007	0.1950654	0.23760336	2.5816716	17	—	—
158 Koronis	9.27	X	96.30197	142.59715	277.95278	1.00147	0.0519385	0.20284075	2.8687932	17	1 14.6	13.1
159 Aemilia	8.12	X	286.19366	333.31635	134.12569	6.12990	0.1074815	0.18022407	3.1040415	17	10 27.1	12.3
160 Una	9.08	X	232.18184	52.69627	8.60169	3.82472	0.066					

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
161 Athor	9.15 ^m	0.13	96.22013	294.98402	18.60787	9.05969	0.1374123	0.26850226	2.3796007	17	12 22.5	12.8
162 Laurentia	8.83	X	15.18481	116.33526	35.53835	6.09773	0.1791015	0.18796755	3.0181961	17	1 11.7	12.3
163 Erigone	9.47	-0.04	28.24768	298.28647	160.16267	4.81491	0.1904625	0.27064810	2.3670062	17	—	—
164 Eva	8.89	X	311.74299	284.08129	76.82084	24.47328	0.3462087	0.23080592	2.6321144	17	6 2.4	12.4
165 Loreley	7.65	X	197.38885	347.17728	302.52119	11.22640	0.0852067	0.17849191	3.1240911	17	—	—
166 Rhodope	9.89	X	324.65069	264.50185	128.91993	12.02802	0.2117801	0.22399535	2.6852005	17	9 5.8	12.6
167 Urda	9.1	X	119.45241	132.94193	166.21766	2.21245	0.0368267	0.20444207	2.8537935	17	12 14.1	13.1
168 Sibylla	7.94	X	234.00521	174.87909	205.96335	4.67022	0.0730939	0.15902933	3.3740478	17	5 13.5	13.0
169 Zelia	9.56	X	358.35890	335.05012	354.76613	5.49974	0.1305381	0.27218077	2.3581120	17	8 14.3	11.7
170 Maria	9.39	X	185.10777	158.81488	301.30785	14.37858	0.0637058	0.24162445	2.5529489	17	6 20.8	13.2
171 Ophelia	8.31	X	82.78640	56.34783	100.47937	2.54659	0.1324556	0.17801224	3.1297007	17	5 15.6	12.5
172 Baucis	8.79	X	282.51022	359.50832	331.93967	10.01902	0.1139260	0.26843911	2.3799739	17	4 9.9	12.2
173 Ino	7.66	0.01	263.89186	228.84622	148.18395	14.19583	0.2083654	0.21697992	2.7427719	17	5 24.4	12.4
174 Phaedra	8.48	X	52.07651	289.18069	327.68882	12.12323	0.1411565	0.20364700	2.8612164	17	8 11.1	11.9
175 Andromache	8.31	X	105.15179	320.32511	21.34884	3.21832	0.2326934	0.17346780	3.1841252	17	—	—
176 Iduna	8.2	X	234.21909	188.42373	200.50462	22.67504	0.1700399	0.17364459	3.1819636	17	5 16.4	13.6
177 Irma	9.49	X	127.61327	38.25744	347.55129	1.38861	0.2371262	0.21385617	2.7694160	17	2 4.3	13.4
178 Belisana	9.4	X	221.68654	212.81336	51.10786	1.89508	0.0432377	0.25545360	2.4599599	17	—	—
179 Klytaemnestra	8.15	X	155.96648	103.66448	251.92192	7.81591	0.1136764	0.19248345	2.9708026	17	1 17.6	12.6
180 Garumna	10.31	X	29.60154	175.96375	312.16329	0.86587	0.1649790	0.21933918	2.7230685	17	—	—
181 Eucharis	7.84	X	103.42442	318.99485	143.13569	18.87107	0.2045745	0.17794670	3.1304691	17	4 19.8	12.6
182 Elsa	9.12	X	125.18137	310.42648	107.22587	2.00431	0.1853622	0.26221339	2.4174981	17	2 22.7	12.0
183 Istria	9.68	X	19.31294	264.12679	141.94963	26.39035	0.3509232	0.21135162	2.7912516	17	—	—
184 Dejopeja	8.31	X	188.21051	209.94372	331.61072	1.14318	0.0666378	0.17312623	3.1883119	17	10 6.7	13.0
185 Eunike	7.62	X	54.56106	223.92717	153.83428	23.23648	0.1922921	0.21754492	2.7380209	17	—	—
186 Celuta	8.91	X	23.81084	315.68501	14.76938	13.18531	0.1498212	0.27150535	2.3620212	17	10 7.8	10.9
187 Lamberta	8.16	X	304.92351	196.97434	21.70571	10.58846	0.2414700	0.21886482	2.7270017	17	—	—
188 Menippe	9.22	X	72.56132	70.18207	240.89771	11.70371	0.1785764	0.21468444	2.7622883	17	11 23.3	12.9
189 Phthia	9.33	X	80.06599	167.70481	203.42085	5.17774	0.0370507	0.25697412	2.4502466	17	—	—
190 Ismene	7.59	X	184.64727	271.33731	175.46575	6.17703	0.1660979	0.12387637	3.9854472	17	6 14.2	14.0
191 Kolga	9.07	X	46.43109	226.87619	159.30522	11.50699	0.0910032	0.20012525	2.8946860	17	—	—
192 Nausikaa	7.13	0.03	199.82914	30.31962	343.21386	6.80295	0.2450354	0.26428085	2.4048736	17	3 17.4	11.4
193 Ambrosia	9.68	X	65.36118	81.40118	349.97055	12.00890	0.2962733	0.23494834	2.6010845	17	—	—
194 Prokne	7.68	X	135.55157	163.17812	159.30926	18.50958	0.2382030	0.23306352	2.6150892	17	—	—
195 Eurykleia	9.01	X	194.52333	118.98376	6.99247	6.97172	0.0439876	0.20199320	2.8768125	17	8 9.1	13.2
196 Philomela	6.54	X	345.47611	198.39479	72.32231	7.26274	0.0161900	0.17941048	3.1134186	17	5 16.9	10.9
197 Arete	9.18	X	107.41004	246.38830	81.60218	8.79487	0.1641131	0.21748925	2.7384880	17	—	—
198 Ampella	8.33	X	233.01611	88.91670	268.29438	9.31355	0.2269270	0.25535691	2.4605808	17	3 20.5	12.7
199 Byblis	8.5	X	156.53155	180.17450	88.57833	15.47746	0.1797490	0.17482630	3.1676088	17	12 17.2	13.8
200 Dynamene	8.26	X	97.52474	85.14391	324.57018	6.89516	0.1329934	0.21761545	2.7374292	17	1 8.7	11.5
201 Penelope	8.43	0.24	169.40552	180.79776	157.02528	5.75819	0.1810235	0.22500434	2.6771669	17	1 10.5	12.5
202 Chryseis	7.42	X	84.70841	0.94750	136.76749	8.84713	0.1034040	0.18310181	3.0714324	17	4 21.6	11.6
203 Pompeja	8.76	X	134.14361	57.61965	347.91667	3.17649	0.0582035	0.21751365	2.7382833	17	2 11.1	12.4
204 Kallisto	8.89	X	321.12886	55.17574	205.11417	8.28797	0.1748376	0.22572595	2.6714582	17	2 24.8	12.7
205 Martha	9.23	X	283.65918	177.21446	211.79283	10.69601	0.0358520	0.21301039	2.7767420	17	7 19.2	13.2
206 Hersilia	8.68	X	75.51838	300.08199	145.16796	3.77853	0.0372871	0.21721926	2.7407568	17	1 11.4	12.2
207 Hedda	9.92	X	148.76312	193.38731	29.21222	3.80354	0.0288566	0.28550359	2.2841695	17	10 18.7	12.7
208 Lacrimosa	8.96	X	290.10732	108.11140	4.26275	1.74536	0.0127934	0.20023920	2.8935876	17	11 18.4	12.9
209 Dido	8.24	X	21.95709	248.75570	0.66895	7.17155	0.0565466	0.17660733	3.1462766	17	6 6.1	12.4
210 Isabella	9.33	X	241.14643	15.04011	32.58084	5.26043	0.1233653	0.21957452	2.7211224	17	6 12.5	13.5
211 Isolda	7.89	0.12	334.48793	173.46841	263.62697	3.88565	0.1611387	0.18572737	3.0424173	17	11 24.8	11.1
212 Medea	8.28	X	99.66337	101.08050	313.47316	4.26266	0.1045609	0.17915108	3.1164232	17	1 25.8	12.5
213 Lilaea	8.64	X	286.11153	162.06722	122.08529	6.79960	0.045252	0.21566320	2.7539244	17	2 25.2	12.9
214 Aschera	9.2	X	260.69936	131.37054	341.99852	3.43586	0.1314935	0.23353421	2.6115743	17	10 11.8	12.7
215 Oenone	9.4	X	176.97251	315.62172	25.00393	1.68577	0.0360957	0.21426140	2.7659230	17	1 10.8	13.2
216 Kleopatra	7.30	0.29	304.00653	180.13558	215.35936	13.11338	0.2507921	0.21108076	2.7936390	17	7 21.3	11.1
217 Eudora	9.8	X	70.44479	155.30774	162.59000	10.51597	0.3095413	0.20287485	2.8684717	17	12 15.0	14.4
218 Bianca	8.60	0.32	260.56089	63.09213	170.63113	15.20078	0.1172469	0.22636490	2.6664288	17	—	—
219 Thusnelda	9.32	X	347.15935	142.79694	200.82255	10.86290	0.2230162	0.27288124	2.3540748	17	7 27.7	11.3
220 Stephania	11.2	X	239.15975	78.48035	257.91675	7.58952	0.2575341	0.27371341	2.3493010	17	2 26.4	15.4
221 Eos	7.67	0.13	142.21092	193.37706	141.83868	10.88100	0.1045460	0.18879049	3.0094189	17	—	—
222 Lucia	9.13	X	59.97539	181.06271	80.13860	2.14933	0.1311760	0.17696843	3.1419952	17	8 27.9	13.1
223 Rosa	9.68	X	21.83820	61.85933	47.92634	1.93550	0.1156069	0.18105216	3.0945695	17	—	—
224 Oceana	8.59	X	92.84888	284.57806	352.81645	5.84186	0.0434022	0.22901397	2.6458267	17	10 16.9	12.1
225 Henrietta	8.72	X	222.45294	104.08514	197.11213	20.87270	0.2640161	0.15797189	3.3890880	17	1 21.9	15.0
226 Weringia	9.9	X	103.08155	154.13042	134.96196	15.96441	0.2033483	0.22056769	2.7129479	17	12 4.2	14.5
227 Philosophia	9.1	X	141.20006	267.10978	326.24445	9.15176	0.1908682	0.17509330	3.1643877	17	10 22.1	14.5
228 Agathe	12.48	X	119.84009	19.08744	313.34585	2.53643	0.2422965	0.30184435	2.2009694	17	—	—
229 Adelinda	9.13	X	140.52105	311.11061	28.04367	2.07869	0.1391679	0.15581417	3.4203044	17	—	—
230 Athamantis	7.35	0.27	222.58553	139.89757	239.85224	9.44989	0.0612107	0.26800242	2.3825585	17	4 10.8	10.7
231 Vindobona	9.6	X	91.38728	268.70353	350.53613	5.10157	0.1513779	0.19713486	2.9238860	17	10 5.8	13.8
232 Russia	10.25	X	310.30290	52.23710	152.24667	6.06605	0.1748169	0.24173723	2.5521548	17	—	—
233 Asterope	8.21	X	229.29489	125.41603	221.97463	7.68877	0.0992849	0.22689276	2.6622917	17	3 13.9	12.4
234 Barbara	9.02	X	124.02048	192.29450	144.54737	15.37515	0.2457049	0.26760352	2.3849256	17	—	—
235 Carolina	8.9	X	259.08604	209.01520	66.02827	9.03031	0.0633631	0.20153814	2.8811413	17	1 27.8	13.2
236 Honoria	8.18	-0.02	18.82342	174.82094	185.85955	7.69414	0.1906160	0.21051142	2.7986738	17	11 12.7	11.3
237 Coelestina	9.24	X	338.80027	199.53036	84.24847	9.74757	0.0711275	0.21463321	2.7627279	17	5 14.9	12.8
238 Hypatia	8.18	X	249.42733	210.88112	183.88359	12.41277	0.0892174	0.19896599	2.9059188	17	6 11.3	12.7
239Adrastea	10.4	X	310.84757	210.11045	180.63258	6.17453	0.2349998	0.19288076	2.9667215	17	7 31.3	14.1
240 Vanadis	9.00	X	150.56527	300.59104	115.13070	2.10380	0.205					

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
241 Germania	7.58 ^m	X	352.10343	80.55722	270.35705	5.50415	0.1023827	0.18508065	3.0495005	17	8 31.7	11.4
242 Kriemhild	9.3	X	72.22797	279.88625	206.93179	11.35395	0.1202396	0.20330672	2.8644081	17	3 10.6	12.8
243 Ida	9.94	X	118.63258	112.49318	323.94737	1.12998	0.0413594	0.20335216	2.8639813	17	3 2.6	13.8
244 Sita	11.9	X	169.25474	166.12349	208.97420	2.84467	0.1371466	0.30729556	2.1748628	17	1 31.9	14.6
245 Vera	7.82	X	191.72597	330.73513	61.08228	5.17606	0.1947053	0.18012747	3.1051512	17	4 13.5	13.1
246 Asporina	8.62	X	261.67412	96.57472	162.34541	15.62602	0.1100541	0.22298585	2.6932986	17	—	—
247 Eukrate	8.04	X	162.37020	55.19335	0.13488	24.96303	0.2437468	0.21688313	2.7435879	17	4 6.8	12.9
248 Lameia	10.2	X	5.79623	10.68443	246.79459	4.06087	0.0659134	0.25382235	2.4704884	17	5 11.0	12.9
249 Ilse	11.33	X	331.55198	42.32972	334.72189	9.61954	0.2178379	0.26890554	2.3772210	17	8 21.8	13.2
250 Bettina	7.58	X	127.75464	76.28619	23.85298	12.82304	0.1338889	0.17661851	3.1461438	17	4 27.9	12.2
251 Sophia	9.9	X	12.31536	285.78305	156.14888	10.51015	0.0987981	0.18088409	3.0964861	17	—	—
252 Clementina	9.7	X	200.68347	156.45119	202.02740	10.04790	0.0677815	0.17507665	3.1645884	17	3 7.7	14.7
253 Mathilde	10.3	X	261.75029	157.49243	179.57970	6.74077	0.2632006	0.22838526	2.6506802	17	3 25.8	14.9
254 Augusta	12.13	X	102.08735	233.22645	28.47247	4.51307	0.1215308	0.30308337	2.1949669	17	10 23.8	15.0
255 Oppavia	10.39	X	347.65696	156.15690	13.67021	9.47204	0.0775416	0.21661977	2.7458111	17	—	—
256 Walpurga	9.9	X	67.90628	46.68901	182.93662	13.32806	0.0663202	0.18977255	2.9990275	17	7 15.7	14.2
257 Silesia	9.47	X	101.84752	27.93291	34.36593	3.63500	0.1113994	0.17877218	3.1208251	17	2 9.4	13.6
258 Tyche	8.50	0.23	250.47655	155.45189	207.56719	14.32335	0.2038589	0.23288998	2.6163882	17	4 19.7	12.7
259 Aletheia	7.76	X	213.37131	168.04655	86.84752	10.81674	0.1283583	0.17771188	3.1332262	17	—	—
260 Huberta	8.97	X	172.41591	180.93481	165.39408	6.41556	0.1146589	0.15415689	3.4447742	17	2 1.4	14.3
261 Prymno	9.44	0.19	146.65562	65.76906	96.63561	3.63584	0.0892433	0.27686240	2.3314533	17	7 28.8	12.5
262 Valda	11.67	X	5.21530	25.35635	38.48626	7.68714	0.2138083	0.24178694	2.5518050	17	—	—
263 Dresda	10.2	X	258.60340	162.73676	216.17075	1.32037	0.0771778	0.20103338	2.8859620	17	6 2.0	14.4
264 Libussa	8.42	X	339.26916	340.77533	49.60301	10.42534	0.1370611	0.21062277	2.7976873	17	10 9.1	11.5
265 Anna	11.9	X	189.57605	251.60289	335.55747	25.64093	0.2671705	0.26174707	2.4203685	17	11 21.8	16.8
266 Aline	8.80	X	137.06581	150.61639	235.89062	13.39946	0.1559423	0.20980392	2.8049620	17	1 31.6	13.1
267 Tirza	10.2	X	53.08659	196.39085	73.75087	6.00308	0.0984834	0.21323785	2.7747670	17	8 26.4	13.7
268 Adorea	8.28	X	14.97612	69.32242	120.89065	2.43952	0.1376252	0.18106595	3.0944124	17	3 8.3	11.7
269 Justitia	9.7	X	312.92539	119.43054	156.75171	5.47796	0.2135534	0.23283203	2.6168223	17	3 3.1	13.4
270 Anahita	8.75	X	339.99306	80.71876	254.35406	2.36810	0.1501055	0.30241545	2.1981976	17	7 6.9	10.3
271 Penthesilea	9.80	X	319.80617	58.16517	335.37062	3.53907	0.1036835	0.18924875	3.0045587	17	9 8.2	13.5
272 Antonia	10.7	X	32.65273	64.53398	37.40775	4.43965	0.0266931	0.21294526	2.7773082	17	—	—
273 Atropos	10.26	X	234.24114	121.11677	158.95388	20.45421	0.1605533	0.26596423	2.3947153	17	—	—
274 Philagoria	10.0	X	119.60775	119.54227	92.80345	3.67733	0.1197779	0.18553931	3.0444727	17	9 7.7	14.5
275 Sapiientia	8.85	X	26.49339	39.99270	134.08252	4.76306	0.1639330	0.21358415	2.7717669	17	2 22.5	11.7
276 Adelheid	8.6	X	276.54429	265.21212	211.16402	21.61382	0.0678435	0.17900796	3.1180841	17	10 28.8	12.9
277 Elvira	9.84	X	347.01718	137.38720	231.25714	1.16243	0.0916941	0.20111923	2.8851406	17	9 19.3	13.3
278 Paulina	9.4	X	130.96759	139.58858	62.00308	7.81748	0.1320969	0.21543128	2.7559005	17	9 10.0	13.7
279 Thule	8.57	X	120.71487	27.86448	71.99150	2.33656	0.0327575	0.10988717	4.3168940	17	4 19.8	14.5
280 Philia	10.9	X	130.96377	89.80787	9.89683	7.44151	0.1089163	0.19519489	2.9432269	17	4 25.4	15.3
281 Lucretia	12.02	0.28	283.78201	16.71969	31.41294	5.30420	0.1326862	0.30463553	2.1875048	17	7 30.7	14.5
282 Clorinde	10.91	X	27.52266	295.95826	144.96639	9.03290	0.0804690	0.27552019	2.3390191	17	—	—
283 Emma	8.72	X	200.88419	54.05509	304.24850	7.97741	0.1460200	0.18488637	3.0516364	17	3 6.8	13.8
284 Amalia	10.05	0.11	108.88249	58.06529	233.71062	8.05706	0.2216692	0.27202360	2.3590202	17	12 14.7	13.8
285 Regina	10.7	X	210.25941	14.37646	311.37772	17.61222	0.2063969	0.18192983	3.0846088	17	2 8.1	15.9
286 Iclea	9.0	X	119.14818	212.76945	149.10843	17.90218	0.0288349	0.17268615	3.1937264	17	—	—
287 Nephtys	8.30	0.22	235.10728	120.91018	142.37616	10.03441	0.0235790	0.27314245	2.3525738	17	—	—
288 Glaue	9.84	X	262.04899	84.91445	120.12469	4.33548	0.2048694	0.21485481	2.7608279	17	—	—
289 Netetta	9.51	X	184.78219	189.53391	182.10994	6.69360	0.2027923	0.20183001	2.8783630	17	3 10.5	14.3
290 Bruna	11.9	X	282.08161	105.04366	10.49737	22.33144	0.2570151	0.27570300	2.3379850	17	10 9.4	14.6
291 Alice	11.45	X	234.34847	331.55792	161.65347	1.85551	0.0922634	0.29751839	2.2222530	17	9 30.0	14.2
292 Ludovica	9.9	X	125.13115	286.65317	43.53113	14.89773	0.0343630	0.24501693	2.5293290	17	—	—
293 Brasilia	9.94	X	189.44127	86.89944	61.30965	15.58252	0.1066334	0.20371003	2.8606262	17	9 5.6	14.7
294 Felicia	10.2	X	284.71273	185.67316	135.77668	6.26320	0.2336417	0.17563714	3.1578523	17	4 7.9	15.1
295 Theresia	10.19	X	351.10551	147.98422	276.03886	2.70808	0.1718128	0.21087975	2.7954140	17	12 13.7	12.8
296 Phaëtusa	12.62	X	31.05362	252.57585	121.58241	1.74737	0.1608381	0.29620596	2.2288124	17	12 29.4	14.9
297 Caecilia	9.1	X	186.96028	354.02634	332.10316	7.55241	0.1426356	0.17518445	3.1632901	17	1 22.5	14.2
298 Baptistina	11.2	X	325.31455	135.10680	8.21358	6.28809	0.0955129	0.28939276	2.2636587	17	—	—
299 Thora	11.3	X	144.50973	150.93317	241.50982	1.60398	0.0618101	0.25948015	2.4344450	17	1 26.4	14.5
300 Geraldina	9.8	X	21.61526	325.42779	42.68235	0.73214	0.0568527	0.17167179	3.2062946	17	11 6.9	14.0
301 Bavaria	10.3	X	203.67411	125.43624	142.36691	4.89487	0.0669785	0.21917153	2.7244570	17	—	—
302 Clarissa	10.89	X	319.59225	54.46298	7.85816	3.41353	0.1116998	0.26411781	2.4058632	17	10 20.2	13.3
303 Josephina	8.9	X	68.79538	63.94160	343.99402	6.87287	0.0616153	0.17867994	3.1218991	17	—	—
304 Olga	9.74	0.07	169.54453	172.37177	159.07764	15.85326	0.2223399	0.26466904	2.4025215	17	—	—
305 Gordonia	8.77	X	115.73462	261.03777	207.48621	4.45010	0.1943688	0.18131065	3.0916276	17	5 4.3	13.3
306 Unitas	8.96	X	197.97053	167.93256	141.90852	7.27811	0.1514702	0.27228880	2.3574882	17	—	—
307 Nike	10.12	X	250.23560	324.68061	100.96421	6.12601	0.1433623	0.19892563	2.9063119	17	7 15.6	14.6
308 Polyxo	8.17	0.21	157.13145	115.25144	181.72660	4.36147	0.0402405	0.21623709	2.7490497	17	—	—
309 Fraternitas	10.7	X	280.97970	310.32952	356.56455	3.71565	0.1140057	0.22636249	2.6664477	17	3 19.5	14.4
310 Margarita	10.1	X	223.71157	324.74318	229.26888	3.17196	0.1133915	0.21460837	2.7629410	17	11 27.7	14.1
311 Claudia	10.0	X	333.03538	58.45107	81.00978	3.22728	0.0022088	0.19989116	2.8969455	17	—	—
312 Pierretta	8.89	X	127.47600	262.60558	6.27844	9.02888	0.1590805	0.21224706	2.7833955	17	11 22.8	13.5
313 Chaldaea	8.90	X	9.92927	316.07207	176.63819	11.65356	0.1808592	0.26927216	2.3750627	17	—	—
314 Rosalia	10.0	X	186.85481	190.56272	170.31298	12.55113	0.1749393	0.17562207	3.1580329	17	3 2.5	15.2
315 Constantia	12.5	X	204.24363	172.76968	161.66101	2.42911	0.1686787	0.29372212	2.2413600	17	1 23.8	15.8
316 Goberta	10.1	X	25.27033	314.74019	123.91739	2.33907	0.1359520	0.17397614	3.1779197	17	—	—
317 Roxane	10.03	X	153.52808	186.77476	151.38114	1.76578	0.0859631	0.28513267	2.2861500	17	—	—
318 Magdalena	9.4	X	227.74792	296.61010	161.51008	10.65686	0.0848570	0.17267418	3.1938740	17	8 6.3	14.2
319 Leona	10.1	X	21.41446	228.26719	184.94499	10.56357	0.2172424	0.15684489	3.4053034	17	—	—
320 Katharina	10.8	X	31.21503	150.02922	219.92406	9.37901	0.1169210	0.18858149	3.0116420	17	12 1.4	14.7

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
321 Florentina	10.0 ^m	X	201.97245	36.78252	40.22150	2.58759	0.0465442	0.20120868	2.8842855	17	6 12.6	14.2
322 Phaeo	9.01	X	67.94815	115.03465	252.36197	8.05406	0.2462777	0.21249124	2.7812628	17	—	—
323 Brucia	9.73	X	106.64185	291.25916	97.39787	24.22966	0.3005029	0.26808909	2.3820449	17	—	—
324 Bamberg	6.82	0.09	315.16457	44.31650	327.86013	11.10087	0.3404645	0.22447156	2.6814014	17	6 23.9	10.4
325 Heidelberg	8.65	X	75.75461	68.56393	344.87891	8.55449	0.1589295	0.17133489	3.2104963	17	—	—
326 Tamara	9.36	X	137.91417	238.56361	32.20523	23.73012	0.1899681	0.27933049	2.3176996	17	12 7.6	13.5
327 Columbia	9.9	X	298.17258	306.53172	354.79315	7.14218	0.0612513	0.21298456	2.7769664	17	4 9.6	13.7
328 Gudrun	8.8	X	37.06171	104.00054	352.32519	16.11651	0.1056365	0.17972195	3.1098203	17	—	—
329 Svea	9.6	X	25.60893	53.94161	178.48204	15.88058	0.0247866	0.25289390	2.4765312	17	5 11.7	12.9
330 Adalberta	12.4	X	334.76101	259.22755	137.13479	6.75659	0.2533756	0.25417824	2.4681817	17	9 29.7	14.0
331 Etheridgea	9.62	X	163.58635	333.02541	22.03515	6.05375	0.0998118	0.18743392	3.0239220	17	1 28.3	14.2
332 Siri	9.7	X	270.96534	296.93871	31.57667	2.84601	0.0880232	0.21324333	2.7747195	17	4 10.1	13.6
333 Badenia	9.46	X	203.66961	21.25900	353.47743	3.74924	0.1588762	0.17722763	3.1389310	17	4 1.1	14.6
334 Chicago	7.7	X	161.84280	147.99328	130.16739	4.64160	0.0227363	0.12828784	3.8935498	17	12 26.6	13.3
335 Roberta	8.96	X	96.64044	140.03349	148.45031	5.10017	0.1723146	0.25300708	2.4757926	17	11 24.9	12.6
336 Lacadiera	9.76	X	80.74340	31.25518	235.04034	5.65323	0.0952302	0.29167316	2.2518445	17	9 25.6	12.4
337 Devosa	8.74	0.19	276.93404	98.52570	355.48073	7.85397	0.1372207	0.26785271	2.3834462	17	9 23.0	11.7
338 Budrosa	8.5	X	20.95185	111.39945	287.42351	6.04849	0.0223680	0.19826706	2.9127441	17	12 13.4	12.3
339 Dorothea	9.24	X	347.02128	164.38336	173.51100	9.96389	0.0973169	0.18853813	3.0121037	17	8 6.7	13.0
340 Eduarda	9.9	X	109.85035	42.09404	27.05391	4.67675	0.1145217	0.21630603	2.7484656	17	2 19.5	13.4
341 California	10.55	X	136.55863	293.82038	29.04580	5.66905	0.1944820	0.30223711	2.1990622	17	—	—
342 Endymion	10.22	X	71.46829	224.86594	232.68167	7.34912	0.1277836	0.23929692	2.5694765	17	1 17.7	13.0
343 Ostara	11.56	X	121.69681	9.75436	38.63406	3.26490	0.2286843	0.26295090	2.4129757	17	2 12.8	14.4
344 Desiderata	8.08	X	35.33833	237.48065	48.04452	18.34706	0.3132098	0.23547528	2.5972026	17	9 29.2	10.8
345 Tercidina	8.71	0.10	39.83853	230.29823	212.62909	9.74822	0.0608995	0.27801201	2.3250217	17	—	—
346 Hermentaria	7.13	X	272.89166	292.17745	91.94723	8.75229	0.1015631	0.21088291	2.7953860	17	6 21.9	11.1
347 Pariana	8.96	X	101.59419	86.16787	85.52113	11.68154	0.1669061	0.23367451	2.6105288	17	6 28.0	12.3
348 May	9.4	X	98.06025	14.19456	89.96232	9.74579	0.0683728	0.19230667	2.9726228	17	3 22.8	13.6
349 Dembowska	5.93	0.37	25.86620	346.08686	32.34975	8.24617	0.0915353	0.19710784	2.9241531	17	11 30.5	9.6
350 Ornamenta	8.37	X	249.13354	338.25377	90.10543	24.89306	0.1592843	0.17977505	3.1092080	17	7 16.7	13.3
351 Yrsa	8.98	X	5.41692	31.65279	99.25200	9.19569	0.1523937	0.21419508	2.7664939	17	—	—
352 Gisela	10.01	X	195.55528	144.53782	247.28611	3.38327	0.1492550	0.30313533	2.1947161	17	3 25.9	13.3
353 Ruperto-Carola	11.0	X	232.74702	321.43618	102.47354	5.70818	0.3274297	0.21793548	2.7347487	17	6 14.3	16.1
354 Eleonora	6.44	0.37	207.95003	5.55908	140.37066	18.39981	0.1144165	0.21051827	2.7986130	17	9 16.1	10.8
355 Gabriella	10.1	X	308.45408	105.54743	351.82510	4.28304	0.1064716	0.24377479	2.5379137	17	11 18.0	13.0
356 Liguria	8.22	X	114.66840	78.82787	354.77674	8.21538	0.2377238	0.21484179	2.7609394	17	3 19.8	11.9
357 Ninia	8.72	X	213.98427	254.99433	137.67911	15.05099	0.0756948	0.17616010	3.1515995	17	5 9.0	13.8
358 Apollonia	9.1	X	260.25711	253.25927	172.15933	3.55409	0.1528571	0.20209865	2.8758116	17	7 24.1	13.5
359 Georgia	8.86	X	51.48951	338.47697	6.07262	6.77123	0.1571065	0.21868265	2.7285159	17	12 5.4	12.5
360 Carlota	8.48	X	66.27500	287.86667	132.54754	11.69711	0.1777575	0.18950632	3.0018357	17	—	—
361 Bononia	8.22	X	19.23142	68.37638	18.87246	12.62640	0.2135167	0.12517293	3.9578784	17	—	—
362 Havnia	9.00	X	136.79754	30.62398	27.34830	8.06831	0.0428038	0.23781366	2.5801494	17	2 25.9	12.5
363 Padua	9.01	X	279.66737	296.18136	64.74741	5.94715	0.0706274	0.21647584	2.7470281	17	6 3.2	12.8
364 Isara	9.86	X	322.26124	312.77853	105.54206	6.00332	0.1497628	0.29784108	2.2206476	17	10 22.7	11.7
365 Corduba	9.2	X	317.96505	216.34920	185.19511	12.79155	0.1572774	0.21013139	2.8020471	17	9 7.9	12.5
366 Vincentina	8.6	X	354.08070	332.50723	346.72632	10.57963	0.0555506	0.17678266	3.1441959	17	7 31.4	12.8
367 Amicitia	10.6	X	302.95988	55.59454	83.45006	2.94152	0.0953469	0.29807853	2.2194682	17	—	—
368 Haidea	9.93	X	343.15315	95.12356	226.33884	7.79650	0.2003419	0.18291577	3.0735147	17	6 29.6	13.4
369 Aëria	8.52	X	205.45105	268.81733	94.20896	12.70590	0.0964971	0.22834360	2.6510026	17	3 17.7	12.8
370 Modestia	10.68	X	320.37058	68.89266	290.92406	7.86493	0.0911496	0.27816176	2.3241871	17	7 21.5	13.1
371 Bohemia	8.72	X	230.81439	343.48427	283.43913	7.39748	0.0645842	0.21904158	2.7255345	17	—	—
372 Palma	7.5	X	346.24711	115.56612	327.36368	23.82516	0.2594156	0.17619789	3.1511489	17	12 30.8	10.9
373 Melusina	9.13	X	198.99543	347.87956	3.84182	15.42307	0.1405001	0.17876253	3.1209373	17	3 5.1	14.2
374 Burgundia	8.67	X	20.46031	25.07583	219.01558	8.99427	0.0798877	0.21271904	2.7792768	17	5 24.1	12.0
375 Ursula	7.47	0.27	189.03168	342.14620	336.57109	15.94279	0.1059016	0.17853070	3.1236386	17	1 15.7	12.4
376 Geometria	9.49	X	17.13979	316.67353	302.00244	5.43241	0.1720843	0.28474157	2.2882430	17	5 19.4	11.2
377 Campania	8.89	X	2.74949	195.91062	210.12258	6.67853	0.0781798	0.22335835	2.6903033	17	12 6.0	12.1
378 Holmia	9.8	X	297.26597	157.72405	232.45426	7.00607	0.1300025	0.21311609	2.7758238	17	7 25.4	13.6
379 Huenna	8.87	X	196.94193	180.05646	172.02746	1.67097	0.1840228	0.17707402	3.1407460	17	3 1.3	14.0
380 Fiducia	9.42	X	201.82559	239.50493	95.10268	6.15792	0.1143212	0.22485021	2.6783902	17	2 3.7	13.6
381 Myrrha	8.25	X	58.72229	143.07872	125.10118	12.55670	0.0900043	0.17026113	3.2239803	17	8 30.8	12.6
382 Dodona	8.77	X	77.80527	270.10676	313.50855	7.39240	0.1720915	0.17879877	3.1205156	17	8 8.9	12.9
383 Janina	9.91	X	146.60684	323.16374	92.88882	2.65349	0.1638300	0.17631683	3.1497315	17	3 31.8	14.7
384 Burdigala	9.64	X	264.67049	34.95214	47.83506	5.59079	0.1487544	0.22833869	2.6510406	17	8 24.1	13.5
385 Ilmatar	7.49	X	248.42098	188.00708	345.01461	13.54933	0.1222620	0.20473048	2.8511127	17	11 23.5	11.8
386 Siegena	7.43	0.16	146.50191	219.70879	166.88567	20.24859	0.1700309	0.19977735	2.8980456	17	2 18.5	11.9
387 Aquitania	7.41	X	330.99270	157.14351	128.24112	18.11257	0.2351237	0.21720766	2.7408544	17	4 15.3	11.2
388 Charybdis	8.57	0.07	86.78182	332.86932	354.28074	6.44500	0.0650505	0.18918990	3.0051818	17	12 11.1	13.0
389 Industria	7.88	X	82.62599	264.84349	282.29596	8.12184	0.0676156	0.23409213	2.6074231	17	6 6.5	11.1
390 Alma	10.39	X	228.28907	190.19874	305.21987	12.16193	0.1323086	0.22830132	2.6513299	17	9 13.6	14.7
391 Ingeborg	10.8	X	292.15578	147.05507	212.87694	23.20177	0.3052287	0.27886862	2.3202580	17	5 10.0	14.3
392 Wilhelmina	9.8	X	42.58238	174.02908	209.81762	14.32189	0.1413074	0.20130985	2.8833191	17	—	—
393 Lampetia	8.39	X	258.50910	90.75110	212.44981	14.88003	0.3310754	0.21278398	2.7877117	17	2 6.4	13.8
394 Arduina	9.66	X	316.67327	271.16221	66.90838	6.21977	0.2266393	0.21457712	2.7632093	17	5 29.5	13.0
395 Delia	10.38	X	298.55891	10.81286	259.31388	3.35121	0.0861455	0.21195081	2.7859885	17	2 26.4	14.2
396 Aeolia	10.0	X	168.68324	21.81794	249.92303	2.55069	0.1597612	0.21713782	2.7414420	17	—	—
397 Vienna	9.31	X	294.34609	140.14198	227.92786	12.86357	0.2471307	0.23048612	2.6345485	17	6 4.4	13.2
398 Admete	10.4	X	41.16064	159.03744	279.97276	9.52666	0.2233201	0.21748386	2.7385333	17	—	—
399 Persephone	9.0	X	328.90906	194.21490	346.38758	13.11296	0.0736332	0.18492875	3.0511702	17	—	—
400 Ducrosa	10.5	X	5.87257	238.05168	327.10615	10.52553	0.1172197	0.17809093	3.1287787	17	3 11.2	14.4

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
401 Ottilia	9.2	X	237.21164	294.65666	36.11879	5.97290	0.0341529	0.16062323	3.3516898	17	3 21.8	14.1
402 Chloë	9.02	X	359.52872	17.73888	129.41091	11.82587	0.1108189	0.24079690	2.5587948	17	—	—
403 Cyane	9.0	X	73.95191	255.53254	244.35801	9.15462	0.0975936	0.20909714	2.8112792	17	3 25.5	12.7
404 Arsinoë	9.01	X	135.86895	120.46907	92.60447	14.10311	0.1987878	0.23586470	2.5943432	17	10 7.5	13.5
405 Thia	8.46	X	222.26323	308.89186	255.23066	11.93991	0.2424349	0.23699619	2.5860791	17	11 27.5	12.6
406 Erna	10.36	X	168.92753	37.22384	315.76182	4.19204	0.1814300	0.19803645	2.9150049	17	2 3.2	15.0
407 Arachne	8.88	X	247.33552	82.45137	294.59270	7.52064	0.0693440	0.23178211	2.6247188	17	5 12.1	12.8
408 Fama	9.3	X	218.86136	108.59478	297.14684	9.08394	0.1441083	0.17500818	3.1654137	17	5 20.9	14.5
409 Aspasia	7.62	0.29	356.21669	353.21962	242.15234	11.26658	0.0730905	0.23837486	2.5760982	17	3 23.4	10.9
410 Chloris	8.30	X	213.51674	172.93639	96.93673	10.96538	0.2419485	0.21932991	2.7231453	17	—	—
411 Xanthe	9.3	X	248.70361	181.53092	107.45439	15.34360	0.1169899	0.19618049	2.9333609	17	1 30.9	13.9
412 Elisabetha	9.2	X	87.27326	91.38900	106.45394	13.76898	0.0431414	0.21471400	2.7620348	17	6 26.9	12.8
413 Edburga	10.18	X	178.39012	252.71249	103.83381	18.71298	0.3428334	0.23725276	2.5842144	17	2 23.7	15.1
414 Liriope	9.49	X	240.12615	319.40205	110.58642	9.55769	0.0723445	0.15019656	3.5050649	17	7 19.7	14.6
415 Palatia	9.21	X	79.19309	297.21462	126.96670	8.16969	0.3004630	0.21111306	2.7933540	17	1 20.9	11.5
416 Vaticana	7.89	0.20	352.61247	198.03302	58.08587	12.86319	0.2184093	0.21133551	2.7913935	17	4 13.1	11.0
417 Suevia	9.34	X	348.17492	349.34321	199.52931	6.65018	0.1355494	0.21042822	2.7994114	17	1 12.2	13.0
418 Alemannia	9.77	X	327.10901	126.67636	248.83178	6.81782	0.1194712	0.23609508	2.5926552	17	8 20.6	12.8
419 Aurelia	8.42	X	31.93769	44.39903	229.12624	3.92617	0.2505964	0.23551284	2.5969265	17	8 7.0	10.5
420 Bertholda	8.3	X	282.46157	235.99524	242.64764	6.68830	0.0305542	0.15606257	3.4166741	17	11 10.4	13.1
421 Zähringia	11.78	X	297.47046	209.23523	187.39795	7.78544	0.2834386	0.24342168	2.5403675	17	7 9.1	15.3
422 Berolina	10.83	X	148.06516	335.31165	9.08427	4.99910	0.2149590	0.29641211	2.2277789	17	—	—
423 Diotima	7.24	X	312.39367	198.49783	69.38235	11.23823	0.0373275	0.18318382	3.0705156	17	4 2.2	11.7
424 Gratia	9.5	X	75.53110	331.89676	99.24224	8.20924	0.1078036	0.21332063	2.7740491	17	—	—
425 Cornelia	9.7	X	146.01010	121.34705	61.06819	4.04780	0.0601220	0.20103280	2.8859675	17	8 25.0	13.9
426 Hippo	8.42	X	327.83770	222.47979	311.41295	19.47887	0.1038869	0.20076346	2.8885481	17	—	—
427 Galene	10.2	X	167.22498	12.16522	297.41696	5.12504	0.1209151	0.19254441	2.9701755	17	—	—
428 Monachia	12.0	X	80.13354	15.40871	17.62524	6.19902	0.1787867	0.28118457	2.3075001	17	—	—
429 Lotis	9.82	X	182.18866	168.56343	219.94532	9.54027	0.1222889	0.23380295	2.6095726	17	3 16.6	14.0
430 Hybris	11.0	X	355.38726	179.04240	249.43061	14.59527	0.2550712	0.20538792	2.8450252	17	—	—
431 Nephele	8.72	X	300.69672	216.85182	117.19296	1.82761	0.1698463	0.17720562	3.1391908	17	5 17.1	13.0
432 Pythia	8.84	X	112.44479	174.05883	88.75175	12.12037	0.1458315	0.27023718	2.3694051	17	11 10.3	12.4
433 Eros	11.16	0.46	71.28026	178.81658	304.32219	10.82760	0.2225890	0.55987951	1.4579401	17	—	—
434 Hungaria	11.21	X	6.38174	123.96412	175.32865	22.50927	0.0734786	0.36358459	1.9441618	17	6 30.6	13.5
435 Ella	10.23	X	8.32695	333.65181	23.19365	1.81676	0.1555224	0.25705574	2.4497279	17	10 16.8	12.3
436 Patricia	10.0	X	250.80376	41.28367	351.33041	18.50806	0.0681337	0.17220389	3.1996864	17	6 12.8	15.1
437 Rhodia	10.41	X	102.26861	62.02983	263.21018	7.34496	0.2488356	0.26747161	2.3857097	17	—	—
438 Zeuxo	9.80	X	180.01369	211.40672	49.14173	7.37240	0.0681027	0.24146770	2.5540537	17	—	—
439 Ohio	9.83	X	105.09161	243.03092	201.55539	19.15624	0.0627572	0.17744737	3.1363390	17	2 28.8	14.4
440 Theodora	11.5	X	344.60400	179.07220	292.11628	1.59564	0.1070056	0.29993917	2.2102798	17	—	—
441 Bathilde	8.51	X	71.83607	201.90674	253.57279	8.14760	0.0784896	0.20954150	2.8073034	17	1 22.8	12.1
442 Eichsfeldia	10.03	X	295.67661	85.12331	134.93105	6.06908	0.0709080	0.27445908	2.3450439	17	—	—
443 Photographica	10.28	X	328.23554	349.76675	175.44562	4.23574	0.0401085	0.29894130	2.2151957	17	—	—
444 Gypsis	7.83	0.22	97.49709	154.89129	195.71554	10.27776	0.1756792	0.21386815	2.7693126	17	—	—
445 Edna	9.29	X	258.87944	81.50274	292.02529	21.30460	0.1962525	0.17237801	3.1975314	17	5 14.0	14.8
446 Aeternitas	8.90	X	168.29931	279.36900	42.08349	10.62734	0.1272609	0.21197795	2.7857508	17	—	—
447 Valentine	8.99	X	294.93012	322.55360	71.83440	4.79434	0.0441275	0.19107690	2.9853637	17	8 15.0	13.0
448 Natalie	10.30	X	99.18984	294.06618	37.28621	12.72591	0.1871406	0.17763684	3.1341085	17	—	—
449 Hamburga	9.47	X	228.85944	47.28187	85.92187	3.08464	0.1731264	0.24184908	2.5513679	17	9 15.5	13.3
450 Brigitta	10.1	X	199.74913	357.27731	14.46265	10.14759	0.0968957	0.18762183	3.0219027	17	3 24.5	14.8
451 Patientia	6.65	0.19	352.98184	336.95249	89.24049	15.23726	0.0753924	0.18398237	3.0616243	17	12 11.9	10.6
452 Hamiltionia	11.9	X	96.07157	65.15532	92.47634	3.22463	0.0148631	0.20523041	2.8464807	17	5 13.4	15.8
453 Tea	10.4	X	80.91185	220.43826	11.72267	5.55091	0.1088721	0.30555361	2.1831208	17	8 13.2	12.7
454 Mathesis	9.20	X	190.48925	177.46063	32.29817	6.29216	0.1093484	0.23125018	2.6287422	17	11 13.3	13.1
455 Bruchsalia	8.9	X	310.87003	273.48487	76.11543	12.01507	0.2939362	0.22767519	2.6561886	17	5 25.4	12.5
456 Abnoba	9.1	X	86.31316	6.67929	229.21040	14.43901	0.1789356	0.21167967	2.7883671	17	8 30.2	13.3
457 Alleghenia	11.1	X	175.93321	129.20267	249.56455	12.92764	0.1727806	0.18060201	3.0997096	17	3 7.7	16.5
458 Hercynia	9.63	X	178.41072	276.79061	134.25817	12.63955	0.2400236	0.18986760	2.9980266	17	4 28.9	15.0
459 Signe	10.44	X	182.91658	19.40955	29.49702	10.30203	0.2095339	0.23211803	2.6221858	17	4 19.4	14.7
460 Scania	10.7	X	45.80177	162.26895	205.22098	4.63667	0.1062380	0.22004611	2.7172333	17	12 20.8	14.3
461 Saskia	10.48	X	36.36291	304.99454	157.02691	1.46339	0.1405896	0.17872693	3.1213518	17	—	—
462 Eriphyla	9.23	X	21.71039	251.45516	105.27801	3.19222	0.0877202	0.20234379	2.8734885	17	10 30.5	12.8
463 Lola	11.82	X	181.37659	329.32192	36.52624	13.54479	0.2199282	0.26521968	2.3991950	17	2 27.2	15.9
464 Megaira	9.52	X	42.86197	258.42204	102.36345	10.16827	0.2053494	0.21017974	2.8016174	17	12 21.9	13.2
465 Alekto	9.7	X	80.65940	283.85380	300.61082	4.64884	0.2064956	0.18118736	3.0930299	17	8 18.0	13.9
466 Tisiphone	8.5	X	262.96604	249.81911	290.85400	19.11090	0.0921666	0.16044359	3.3541911	17	12 23.9	13.3
467 Laura	10.9	X	83.30744	91.32244	322.47741	6.43628	0.1084463	0.19512255	2.9439544	17	—	—
468 Lina	9.83	X	99.66760	333.15256	21.45608	0.43710	0.1975166	0.17784946	3.1316100	17	—	—
469 Argentina	8.62	X	222.48675	209.67761	333.46637	11.59294	0.1590376	0.17369871	3.1813026	17	11 1.3	13.9
470 Kilia	10.07	X	65.03438	47.04638	173.24142	7.22746	0.0942315	0.26434413	2.4044898	17	6 27.1	12.8
471 Papagena	6.73	0.37	126.82679	314.33928	83.96305	14.97481	0.2311179	0.20061771	2.8899469	17	2 26.6	11.1
472 Roma	8.92	X	110.98365	295.81210	127.16716	15.80029	0.0937733	0.24282922	2.5444978	17	1 31.4	11.9
473 Noll	11.7	X	320.09779	152.36410	332.22696	12.91566	0.1058020	0.22681855	2.6628723	17	—	—
474 Prudentia	11.0	X	319.31481	156.02317	161.81787	8.79493	0.2099152	0.25651900	2.4531439	17	5 4.1	14.1
475 Ocllo	11.88	X	268.08091	305.78302	34.44259	18.94677	0.3788559	0.23558115	2.5964245	17	4 1.1	16.8
476 Hedwig	8.55	X	8.36212	0.60475	286.35445	10.92617	0.0722859	0.22849441	2.6498360	17	7 1.8	11.6
477 Italia	10.25	X	328.93107	322.66148	10.67528	5.28804	0.1874063	0.26256083	2.4153650	17	6 10.7	12.8
478 Tergeste	7.98	X	311.80677	239.54826	233.90053	13.18282	0.0833603	0.18801979	3.0176370	17	12 10.4	11.9
479 Caprera	9.8	X	289.25461	269.87088	136.03019	8.68232	0.2187717	0.21971712	2.7199450	17	7 23.3	13.6
480 Hansa	8.38	X	176.82476	214.61527	237.18461	21.30720	0.0461388	0.22930470	2.6435899	17	5 29.8	12.1

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
481	8.8	X	227.99996	349.74193	66.74251	9.84474	0.1571527	0.21735007	2.7396570	17	6 8.6	13.1
482	8.84	X	2.73846	87.02693	179.40239	14.47351	0.0973743	0.18982766	2.9984470	17	5 30.4	12.8
483	8.33	X	271.40411	160.68664	173.96064	18.75635	0.0510075	0.15549182	3.4250298	17	5 4.9	13.5
484	9.86	X	75.09318	191.58888	127.26857	12.51092	0.0577288	0.22617314	2.6679358	17	11 24.1	13.7
485	8.1	X	204.52499	272.47883	193.43816	13.86798	0.1926761	0.21639040	2.7477511	17	7 15.9	13.0
486	11.1	X	0.95765	124.55291	94.22993	11.09116	0.1624473	0.27313085	2.3526403	17	2 22.0	13.7
487	8.14	X	53.62999	280.44579	114.81875	10.24551	0.0884750	0.22598813	2.6693916	17	—	—
488	7.81	X	267.45726	71.43731	84.21917	11.51888	0.1588912	0.17470439	3.1690822	17	11 22.6	12.4
489	8.32	X	352.78778	12.17032	166.89921	12.99883	0.0454968	0.17612369	3.1520337	17	1 27.9	12.7
490	8.32	X	101.11431	194.19136	178.33242	9.28103	0.0943772	0.17458380	3.1705413	17	—	—
491	9.0	X	4.78657	233.29906	175.42042	18.86133	0.0874862	0.17287499	3.1914002	17	12 7.5	13.5
492	9.9	X	339.35828	296.65845	46.21382	1.61876	0.1777019	0.17939885	3.1135531	17	7 27.0	13.2
493	10.9	X	264.97111	47.09781	357.35517	15.17630	0.1754384	0.17915696	3.1163550	17	7 4.3	15.9
494	8.96	X	219.71355	218.08571	38.21087	7.08682	0.0639412	0.19113260	2.9847837	17	—	—
495	10.78	X	106.06320	206.94862	186.47847	2.27950	0.1295761	0.25130701	2.4869457	17	—	—
496	11.61	X	28.14138	258.64641	207.60714	3.79188	0.0785108	0.30232111	2.1986549	17	—	—
497	10.02	0.11	324.08590	3.61255	6.32562	4.82031	0.3001026	0.20470985	2.8513042	17	7 15.4	13.3
498	8.95	X	269.49233	241.57440	97.22924	9.49331	0.2225552	0.22807115	2.6531134	17	4 10.8	13.4
499	9.39	X	198.48539	174.84668	256.23844	2.09206	0.2150533	0.12286647	4.0072563	17	6 6.8	15.8
500	9.2	X	136.60485	74.45767	289.93141	7.77192	0.1457218	0.23346012	2.6121267	17	1 1.1	12.5
501	9.3	X	270.13811	355.84459	357.26888	20.83854	0.1406659	0.17521472	3.1629256	17	4 30.2	14.4
502	10.77	X	18.57205	19.25698	132.99660	25.02979	0.1796468	0.26803358	2.3823738	17	—	—
503	9.3	X	186.05818	41.96660	68.90088	5.01054	0.1765455	0.21946787	2.7220039	17	7 8.7	13.7
504	10.1	X	190.89830	247.95470	104.60501	12.88458	0.2168479	0.21942556	2.7223539	17	2 23.3	14.8
505	8.61	-0.03	309.29768	337.09539	90.87032	9.83939	0.2459494	0.22416143	2.6838740	17	9 24.2	11.8
506	8.85	X	252.57980	146.10027	312.95055	17.00505	0.1477657	0.18596220	3.0398554	17	8 24.8	13.6
507	9.2	X	259.66385	100.71280	293.44322	9.49856	0.0999992	0.17605835	3.1528136	17	6 22.7	13.9
508	8.4	X	93.07645	197.31234	44.21834	13.33646	0.0082516	0.17527897	3.1621528	17	9 3.8	13.1
509	8.4	X	323.59133	157.74769	217.54310	15.40926	0.0951375	0.18381902	3.0634379	17	8 16.2	12.6
510	9.73	X	3.59834	90.91480	202.71806	9.53525	0.1900282	0.23368161	2.6104759	17	6 25.6	12.3
511	6.22	0.16	228.76674	337.59268	107.60705	15.94004	0.1881386	0.17519423	3.1631723	17	7 16.2	11.3
512	10.68	X	30.90839	249.35705	107.03659	8.74635	0.2544501	0.30422865	2.1894548	17	12 21.5	12.9
513	9.75	X	222.35657	226.19758	184.44907	9.73341	0.0835389	0.18844102	3.0131384	17	6 3.4	14.5
514	9.04	X	126.48921	107.48334	268.63223	3.87697	0.0412502	0.18545029	3.0454469	17	1 2.3	13.3
515	11.23	X	178.72026	300.16504	121.11216	2.03766	0.1740839	0.17855183	3.1233921	17	5 6.0	16.4
516	8.27	X	116.05611	258.02666	328.83671	12.95805	0.2720648	0.22443208	2.6817159	17	9 29.3	12.9
517	9.35	X	114.65132	140.13407	274.40447	3.19344	0.1803156	0.17558926	3.1584264	17	2 23.7	13.9
518	11.0	X	119.07459	117.51021	203.95548	6.72907	0.2284032	0.24462408	2.5320362	17	—	—
519	9.14	X	188.55740	302.44794	44.73613	11.02104	0.1852351	0.21148549	2.7900736	17	2 16.2	13.9
520	10.61	X	291.42201	21.77241	34.29465	10.96002	0.1101549	0.18925908	3.0044494	17	9 1.5	14.8
521	8.31	-0.06	35.84283	215.98545	89.65967	10.59677	0.2824201	0.21737408	2.7394552	17	—	—
522	9.0	X	256.03548	247.66452	116.58353	4.41906	0.0855504	0.14282188	3.6247068	17	5 18.7	14.3
523	9.9	X	108.28276	189.88443	260.68038	4.29996	0.1753803	0.19233454	2.9723358	17	3 27.1	14.1
524	9.83	X	287.70934	80.05627	326.69504	8.22820	0.1284301	0.23046000	2.6347476	17	8 6.4	13.1
525	12.53	X	68.70071	264.39110	203.40943	5.99562	0.1022577	0.29291498	2.2454756	17	1 4.7	14.7
526	10.17	X	246.28055	357.40714	137.77371	2.17337	0.1342953	0.17861530	3.1226522	17	10 7.7	14.8
527	10.4	X	332.50371	203.88191	120.51506	9.66013	0.1498225	0.21903155	2.7256176	17	6 17.8	13.6
528	9.14	X	192.77653	345.38508	49.53926	12.70762	0.0193773	0.15717748	3.4004978	17	4 18.8	14.0
529	10.06	X	14.16149	333.53650	65.20303	11.02505	0.0966403	0.18814294	3.0163201	17	12 9.3	13.9
530	9.29	X	161.60944	200.02564	129.16705	8.56113	0.2195400	0.17339557	3.1850095	17	1 8.3	14.4
531	12.0	X	104.09010	57.75085	197.72871	33.99394	0.1969559	0.21186564	2.7867352	17	10 22.0	16.4
532	5.81	0.26	216.30632	76.17508	107.54057	16.31213	0.1755648	0.21336492	2.7736652	17	11 8.5	10.4
533	9.7	X	8.87027	33.66660	180.34435	6.55763	0.0461326	0.19147763	2.9811171	17	4 1.3	13.5
534	9.77	X	183.57794	339.24184	94.09448	3.27499	0.0581747	0.20129036	2.8835052	17	5 18.5	13.9
535	9.4	X	260.71964	64.73471	84.80387	6.77747	0.0239845	0.23926415	2.5697111	17	12 1.3	12.8
536	8.2	X	2.78698	295.71005	59.23049	19.42427	0.0858536	0.15052968	3.4998918	17	10 5.8	13.0
537	8.7	X	9.95236	187.30690	120.18804	9.87206	0.2283128	0.18280107	3.0748001	17	8 9.4	11.5
538	9.5	X	345.55493	227.69468	141.17330	6.51983	0.1693964	0.17552371	3.1592126	17	9 15.3	12.9
539	10.0	X	303.39476	97.54779	274.29366	6.79883	0.2128862	0.21756959	2.7378139	17	6 27.6	13.4
540	10.76	X	204.45477	337.66920	202.17105	5.58328	0.0895945	0.29814517	2.2191374	17	10 28.1	13.6
541	10.1	X	30.97539	357.92540	267.64246	6.00240	0.0497876	0.20873267	2.8145509	17	7 8.4	13.6
542	9.36	X	276.29583	216.80594	152.96371	12.07459	0.1408617	0.19900094	2.9055786	17	6 5.3	13.9
543	9.4	X	4.91594	109.48678	294.96822	8.47738	0.1544949	0.18424065	3.0587624	17	12 6.5	13.0
544	10.0	X	99.93563	343.39269	298.31400	8.36954	0.1524317	0.23612443	2.5924403	17	11 12.9	14.1
545	8.84	X	14.14843	330.75345	333.63590	11.20396	0.1692765	0.17204589	3.2016450	17	8 13.2	12.4
546	9.70	X	243.69136	108.61162	21.78873	14.85463	0.1157086	0.23537790	2.5979189	17	10 4.4	13.3
547	9.52	X	161.78974	195.64447	193.21023	16.89937	0.2352751	0.21297886	2.7770160	17	3 10.6	14.2
548	11.26	X	242.57102	320.30107	108.42585	3.87262	0.1857152	0.28601056	2.2814695	17	7 2.4	14.7
549	11.01	X	219.13159	158.11997	291.41634	3.96085	0.2584149	0.22426686	2.6830328	17	7 7.8	15.6
550	9.37	X	112.11938	45.30493	270.69333	10.10976	0.2229994	0.23671739	2.5881093	17	—	—
551	9.57	X	23.84334	68.01839	6.00059	0.39709	0.1228165	0.19292018	2.9663174	17	—	—
552	9.6	X	225.42327	348.56650	266.93489	7.69816	0.0887186	0.17634223	3.1494291	17	—	—
553	12.1	X	309.45569	354.40515	72.37358	5.38967	0.1103136	0.29578826	2.2309102	17	10 14.8	14.2
554	9.1	X	323.53027	127.26980	295.42870	2.93437	0.1535948	0.26930872	2.3748478	17	10 23.6	11.4
555	10.8	X	343.65683	356.51179	130.42949	2.64618	0.1495247	0.17323198	3.1870143	17	—	—
556	9.56	X	42.87889	177.52958	286.12036	5.24030	0.1025945	0.25476459	2.4643932	17	—	—
557	12.1	X	183.34362	194.99147	292.80779	2.48973	0.0998782	0.25824741	2.4421860	17	7 24.6	15.7
558	9.09	X	296.58001	311.52781	143.72376	8.37458	0.0430429	0.19874091	2.9081125	17	11 5.2	13.1
559	9.5	X	17.92025	128.24310	112.07567	9.30141	0.0660681	0.22078503	2.7111672	17	5 16.0	12.9
560	11.0	X	273.97510	3.81476	105.34261	8.46849	0.1614313	0.21603517	2.7507624	17	10 9.0	14.8

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
561 Ingwelde	11.21 ^m	X	36.05497	315.90812	159.50292	1.54406	0.1158803	0.17422706	3.1748678	17	1 8.6	14.9
562 Salome	9.95	X	29.07062	263.70068	70.60117	11.10401	0.1007366	0.18785872	3.0193617	17	10 16.5	13.9
563 Suleika	8.50	X	192.59484	336.92535	85.18750	10.24068	0.2352122	0.22055595	2.7130442	17	5 17.3	13.2
564 Dudu	10.43	X	193.32402	214.99313	70.76355	17.99335	0.2772918	0.21664489	2.7455989	17	—	—
565 Marbachia	10.88	X	216.15372	291.64996	225.81233	10.99660	0.1296854	0.25803016	2.4435566	17	10 3.1	14.7
566 Stereoskopia	8.0	X	240.06426	299.21654	79.55167	4.89396	0.1188250	0.15875870	3.3778812	17	5 14.2	13.2
567 Eleutheria	9.16	X	132.10405	133.50489	58.27220	9.25574	0.0909859	0.17768006	3.1336002	17	8 26.7	14.0
568 Cheruskia	9.5	X	244.79716	174.32060	249.79028	18.39421	0.1680693	0.20152737	2.8812439	17	7 2.6	14.2
569 Misa	10.12	X	222.79171	142.88536	301.70513	1.29168	0.1812713	0.22763516	2.6565000	17	7 7.9	14.3
570 Kythera	8.81	X	185.55962	158.14323	223.37192	1.80248	0.1182067	0.15489269	3.4338562	17	3 26.3	14.3
571 Dulcinea	11.59	X	310.55068	27.64980	3.18789	5.22801	0.2438799	0.26356855	2.4092044	17	7 28.6	14.1
572 Rebekka	10.94	X	18.87269	192.04166	194.56464	10.57966	0.1578826	0.26500680	2.4004797	17	12 21.1	13.7
573 Recha	9.4	X	131.10309	28.86057	342.95779	9.83325	0.1138471	0.18851960	3.0123010	17	1 13.9	13.8
574 Reginhild	12.3	X	6.46931	76.66696	336.80847	5.68346	0.2398141	0.29154338	2.2525127	17	—	—
575 Renate	10.8	X	177.23567	333.81785	349.67871	15.01182	0.1279979	0.24146949	2.5540410	17	—	—
576 Emanuela	9.4	X	264.48547	26.60624	299.71240	10.19642	0.1924494	0.19046899	2.9917125	17	3 20.0	14.4
577 Rhea	9.4	X	177.16927	330.70474	328.56739	5.29711	0.1551287	0.17968337	3.1102655	17	—	—
578 Happelia	9.4	X	287.17159	261.16588	29.40907	6.15230	0.1930590	0.21590635	2.7518565	17	3 2.1	13.6
579 Sidonia	7.85	X	236.88694	228.47708	82.70759	11.00728	0.0799355	0.18845323	3.0130083	17	2 20.5	12.6
580 Selene	10.2	X	112.01920	335.71298	99.09094	3.66037	0.0829455	0.16938114	3.2351370	17	3 7.8	14.8
581 Tauntonia	9.8	X	93.21239	28.47371	102.47986	21.87971	0.0331093	0.17102823	3.2143329	17	4 24.3	14.7
582 Olympia	9.11	X	180.88466	310.45550	155.71050	30.03535	0.2226130	0.23382584	2.6094023	17	6 30.6	14.1
583 Klotilde	9.01	X	158.59605	252.33886	257.87111	8.24413	0.1611598	0.17453188	3.1711701	17	7 31.2	14.2
584 Semiramis	8.71	0.24	273.82106	85.44476	282.04064	10.72246	0.2332456	0.26951150	2.3736564	17	5 7.4	12.5
585 Bilkis	10.40	X	164.63536	328.88587	180.29292	7.56787	0.1287385	0.26011171	2.4305028	17	8 1.2	14.2
586 Thekla	9.21	X	32.44440	251.15214	228.43306	1.62612	0.0599857	0.18580072	3.0416165	17	1 5.9	13.2
587 Hypsipyle	11.9	X	85.89104	188.53425	324.57517	24.99293	0.1672987	0.27626577	2.3348088	17	4 13.5	15.1
588 Achilles	8.67	X	188.45232	133.55231	316.53986	10.31764	0.1463784	0.08290972	5.2087368	17	6 24.1	16.3
589 Croatia	9.1	X	161.91486	223.87935	177.59957	10.80839	0.0378694	0.17718897	3.1393876	17	3 16.8	13.7
590 Tomyris	9.90	X	242.64896	339.63159	106.15580	11.17300	0.0804059	0.18981033	2.9986296	17	8 10.4	14.3
591 Irmgard	10.64	X	133.19689	217.25276	334.29092	12.48843	0.2070296	0.22467940	2.6797475	17	8 31.7	15.0
592 Bathseba	9.5	X	166.85516	257.40156	167.87885	10.17461	0.1317540	0.18733429	3.0249940	17	4 28.6	14.3
593 Titania	9.28	0.06	95.29245	31.20911	75.95251	16.89122	0.2153966	0.2203018	2.7010215	17	4 11.6	13.0
594 Mireille	12.01	X	31.14537	76.70609	155.12624	32.59234	0.3532339	0.23146125	2.6271438	17	6 13.8	14.6
595 Polyxena	7.9	X	63.76261	279.24725	23.90796	17.82791	0.0627134	0.17141305	3.2095204	17	10 14.8	12.2
596 Scheila	8.90	X	21.26632	175.15678	70.60625	14.66149	0.1634876	0.19675896	2.9276088	17	5 30.6	11.9
597 Bandusia	9.1	X	67.62626	307.59264	36.53915	12.80441	0.1449753	0.22571208	2.6715677	17	12 24.6	13.0
598 Octavia	9.53	X	249.46738	292.09448	91.52983	12.22595	0.2495901	0.21478031	2.7614662	17	5 16.2	14.4
599 Luisa	8.71	X	317.48196	294.25727	44.18295	16.70885	0.2915505	0.21341258	2.7732522	17	5 18.5	12.2
600 Mutha	10.18	X	238.49377	114.53947	139.29201	10.20000	0.0560545	0.22731470	2.6589961	17	—	—
601 Nerthus	9.65	X	336.28827	159.95259	169.57152	16.14599	0.1032152	0.17767299	3.1336834	17	7 9.9	13.9
602 Marianna	8.31	X	308.58703	45.90661	331.49077	15.10713	0.2497308	0.18196666	3.0841926	17	7 13.2	12.5
603 Timandra	11.8	X	184.64938	159.76510	343.45688	8.02605	0.1743565	0.24373469	2.5381921	17	8 17.6	15.8
604 Tekmessia	9.5	X	62.19109	28.76616	12.16740	4.42127	0.1986815	0.17656304	3.1468028	17	—	—
605 Juvisia	10.0	X	169.20870	14.61136	342.85407	19.65760	0.1387540	0.18968714	2.9999278	17	2 11.5	14.8
606 Brangäne	10.3	X	229.37888	58.17346	318.52236	8.59723	0.2197628	0.23666237	2.5885103	17	4 13.4	14.9
607 Jenny	10.0	X	158.22478	290.41494	285.25788	10.10727	0.0734581	0.20442065	2.8539928	17	10 13.1	14.6
608 Adolfine	10.8	X	34.55512	71.41402	293.84891	9.37917	0.1247043	0.18756768	3.0224843	17	11 29.9	14.8
609 Fulvia	10.3	X	248.40638	112.29594	165.35556	4.18854	0.0416100	0.18188123	3.0851584	17	1 22.6	14.9
610 Valeska	12.4	X	170.06075	0.24957	20.39056	12.69424	0.2552115	0.18094986	3.0957357	17	3 18.7	17.7
611 Valeria	9.19	X	148.36738	256.92612	189.42441	13.44716	0.1215642	0.19164358	2.9794758	17	5 3.6	13.8
612 Veronika	10.7	X	333.04725	122.29736	202.90759	20.95034	0.2583617	0.17599914	3.1535206	17	6 8.2	14.7
613 Ginevra	9.67	X	53.77307	62.28216	354.80150	7.66666	0.0587230	0.19755510	2.9197381	17	—	—
614 Pia	11.0	X	356.45411	208.71156	217.28631	7.02721	0.1110257	0.22293500	2.6937082	17	12 24.1	14.1
615 Roswitha	10.3	X	110.15054	247.30732	13.47233	2.76198	0.1091532	0.23074481	2.6325791	17	10 25.8	14.0
616 Elly	10.68	X	354.95020	107.78660	356.10756	14.95911	0.0588971	0.24161119	2.5530424	17	—	—
617 Patroclus	8.19	X	153.70126	308.26628	44.35393	22.04748	0.1382164	0.08271416	5.2169437	17	2 17.0	15.8
618 Elfriede	8.3	X	211.30586	228.09771	111.02242	17.02747	0.0721628	0.17282811	3.1919773	17	3 3.2	13.3
619 Triberga	9.95	X	287.06287	178.66879	187.48397	13.79997	0.0747146	0.24643001	2.5196506	17	6 16.5	13.6
620 Drakonia	11.28	X	111.98736	336.39733	0.01323	7.73911	0.1352925	0.25935414	2.4352334	17	—	—
621 Werdandi	10.49	X	11.11775	32.00876	67.10583	2.31470	0.1380822	0.17835277	3.1257157	17	—	—
622 Esther	10.3	X	198.30972	257.00395	141.95411	8.63521	0.2425583	0.26252774	2.4155679	17	4 20.8	14.5
623 Chimaera	10.97	X	288.42301	124.29862	308.33588	14.12488	0.1132266	0.25524869	2.4612763	17	9 7.0	14.2
624 Hektor	7.3	X	119.93279	185.01778	342.78742	18.16705	0.0240374	0.08179207	5.2560794	17	7 11.7	14.5
625 Xenia	9.9	X	65.38388	200.73010	127.53634	12.07639	0.2278130	0.22908303	2.6452950	17	12 15.6	13.8
626 Notburga	9.00	X	12.64788	43.63255	341.64426	25.36942	0.2430229	0.23869124	2.5738213	17	12 16.5	12.2
627 Charis	9.95	X	318.92254	176.72041	142.48007	6.47319	0.0578465	0.19959902	2.8997715	17	6 5.7	13.9
628 Christine	9.25	X	60.07104	207.55196	112.11652	11.52573	0.0435600	0.23755892	2.5819936	17	11 5.9	12.8
629 Bernardina	10.0	X	3.19621	35.51901	86.55731	9.25420	0.1534589	0.17737095	3.1372398	17	—	—
630 Euphemia	11.1	X	6.21755	40.26495	105.41518	13.85550	0.1108453	0.23188092	2.6239731	17	—	—
631 Philippina	8.70	X	302.00752	277.98136	224.70650	18.91879	0.0819115	0.21116038	2.7929367	17	—	—
632 Pyrrha	11.4	X	124.52664	252.83433	356.50960	2.21515	0.1899093	0.22660486	2.6645461	17	11 1.4	15.8
633 Zelma	9.73	X	288.65581	189.67509	147.29760	10.90191	0.0832464	0.18794363	3.0184522	17	5 19.5	14.2
634 Ute	9.8	X	170.72654	220.48934	133.44017	12.28529	0.1847820	0.18538649	3.0461456	17	2 8.8	14.6
635 Vundtia	9.01	X	149.87553	225.49140	183.05419	11.02461	0.0757369	0.17647950	3.1477957	17	3 15.3	13.7
636 Erika	9.6	X	261.64259	298.04640	34.61292	7.93180	0.1695134	0.19802682	2.9150994	17	4 1.8	14.2
637 Chrysothemis	11.5	X	232.85240	172.79044	353.45588	0.27090	0.1245372	0.17424232	3.1746824	17	10 30.6	16.3
638 Moira	10.0	X	141.81316	128.69470	103.19769	7.71171	0.1590126	0.21778520	2.7360066	17	10 28.7	14.5
639 Latona	8.20	X	329.12439	70.71635	279.84900	8.55490	0.1062380	0.18810430	3.0167332	17	7 25.6	12.1
640 Brambilla	9.2	X	266.25391	31.13654	234.92824	13.37602	0.0809937	0.17559166	3.15			

ELEMENTS AND OPPOSITION DATES IN 2017

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
641 Agnes	12.4 ^m	X	35.36851	17.68258	41.01902	1.71187	0.1284855	0.29801348	2.2197911	17	—	—
642 Clara	9.98	X	16.18586	118.21339	5.90138	8.17024	0.1216069	0.17293871	3.1906163	17	—	—
643 Scheherezade	9.7	X	226.61435	230.76165	252.18852	13.76790	0.0575595	0.15991246	3.3616140	17	9 1.5	15.0
644 Cosima	11.13	X	91.73580	268.61275	109.97521	1.04087	0.1557452	0.23533003	2.5982712	17	—	—
645 Agrippina	9.94	X	30.91527	84.26499	0.16199	7.04333	0.1454786	0.17129331	3.2110159	17	—	—
646 Kastalia	12.6	X	17.56450	38.17497	302.81392	6.90093	0.2130906	0.27800194	2.3250779	17	10 16.2	14.5
647 Adelgunde	11.41	X	237.76038	175.79018	254.68437	7.33108	0.1947102	0.25839627	2.4412479	17	6 30.6	15.3
648 Pippa	9.68	X	36.35017	178.24521	291.22106	9.80047	0.1941065	0.17158561	3.2073681	17	1 1.5	13.0
649 Josefa	12.7	X	10.86720	349.57710	357.03426	12.71433	0.2787173	0.24253925	2.5465255	17	10 14.0	14.5
650 Amalasuntha	12.93	X	186.43612	178.77254	215.52093	2.56181	0.1833581	0.25546270	2.4599015	17	3 30.6	16.7
651 Antikleia	10.01	X	327.89758	354.77031	38.01874	10.75948	0.1007975	0.18752812	3.0229093	17	9 25.1	13.8
652 Jubilatatrix	10.9	X	0.34956	277.13589	86.19107	15.74260	0.1271093	0.24132015	2.5550946	17	10 17.6	13.9
653 Berenike	9.2	X	231.00707	56.17438	132.85529	11.28898	0.0397575	0.18817560	3.0159711	17	12 7.4	13.7
654 Zelinda	8.52	X	165.24674	213.95531	278.45397	18.12688	0.2314153	0.28318488	2.2966210	17	7 14.4	12.4
655 Briseis	10.0	X	84.68104	278.48370	130.06098	6.49755	0.0865787	0.19076443	2.9886228	17	—	—
656 Beagle	10.0	X	166.02893	330.79630	184.28906	0.51631	0.1343706	0.17637686	3.1490168	17	8 14.2	15.1
657 Gunlod	10.93	X	300.28665	245.38144	297.58386	10.23023	0.1122863	0.23360642	2.6110361	17	—	—
658 Asteria	10.54	X	321.69134	60.80233	351.00857	1.50579	0.0654840	0.20442663	2.8539371	17	10 9.7	14.1
659 Nestor	8.99	X	291.81150	342.43987	350.80991	4.52060	0.1178920	0.08377730	5.1727140	17	5 23.1	15.8
660 Crescentia	9.14	X	283.49664	105.83964	156.98025	15.20375	0.1084908	0.24442927	2.5333814	17	1 21.9	13.0
661 Cloelia	9.6	X	323.27440	181.72767	335.81346	9.23192	0.0338496	0.18821600	3.0155395	17	—	—
662 Newtonia	10.3	X	221.51301	165.51485	133.74213	4.12033	0.2168568	0.24169986	2.5524179	17	1 8.8	14.5
663 Gerlinde	9.21	X	209.17976	311.04864	232.85911	17.82192	0.1458723	0.18325957	3.0696694	17	10 25.6	14.1
664 Judith	9.97	X	97.07698	102.19323	170.95342	8.57750	0.2302630	0.17244801	3.1966659	17	11 8.1	15.1
665 Sabine	8.7	X	220.65203	138.94310	298.42547	14.74399	0.1717943	0.17687969	3.1430460	17	—	—
666 Desdemona	10.6	X	357.13899	174.12879	215.40855	7.58568	0.2381632	0.23601393	2.5932494	17	11 16.3	12.4
667 Denise	9.4	X	275.26450	305.79640	153.25677	25.39978	0.1907800	0.17347333	3.1840575	17	9 20.4	14.1
668 Dora	12.0	X	107.16738	113.23596	214.45117	6.84341	0.2353349	0.21109148	2.7935444	17	—	—
669 Kypria	10.24	X	352.71178	115.29331	170.75168	10.79288	0.0758997	0.18858720	3.0115811	17	6 10.6	14.3
670 Ottegebe	9.4	X	57.73668	195.21557	174.68406	7.53524	0.1940377	0.21009886	2.8023363	17	—	—
671 Carnegia	10.2	X	282.00369	90.96527	0.52059	8.02798	0.0670809	0.18114615	3.0934990	17	10 3.9	14.6
672 Astarte	11.5	X	295.86807	308.61483	343.92260	11.11650	0.1346314	0.24107552	2.5568229	17	3 11.8	15.1
673 Edda	10.20	X	283.26416	235.54782	226.71155	2.87722	0.0112991	0.20865232	2.8152734	17	10 29.2	14.0
674 Rachele	7.42	X	226.51475	41.98046	58.14117	13.51015	0.1956205	0.19738756	2.9213900	17	8 3.9	12.4
675 Ludmilla	7.91	X	184.19018	152.62575	263.03231	9.79767	0.2026999	0.21371650	2.7706225	17	4 28.2	12.6
676 Melitta	9.4	X	283.24034	184.26499	150.26697	12.83861	0.1214447	0.18383442	3.0632669	17	5 6.2	14.1
677 Aaltje	9.5	X	67.52917	275.86364	272.71895	8.48666	0.0509250	0.19411688	2.9541136	17	5 20.1	13.4
678 Fredgundis	9.02	X	168.73061	120.78716	281.22579	6.08208	0.2182152	0.23841752	2.5757909	17	3 26.3	13.4
679 Pax	9.01	X	128.20726	266.76750	112.25369	24.38288	0.3110770	0.23698103	2.5861894	17	2 1.6	12.6
680 Gonneveva	9.31	X	94.16826	245.72955	38.03941	17.49871	0.2937583	0.17660932	3.1462530	17	11 19.2	14.6
681 Gorgo	10.8	X	218.07670	116.89648	177.98373	12.58049	0.1029932	0.18014060	3.1050003	17	1 10.2	15.9
682 Hagar	12.2	X	357.76909	104.89538	190.80638	11.50736	0.1717243	0.22806374	2.6531709	17	6 18.8	15.1
683 Lanzia	8.7	X	350.70745	283.70892	259.71304	18.50831	0.0564019	0.17922665	3.1155471	17	1 24.1	13.2
684 Hildburg	10.8	X	221.38649	291.94680	336.43265	5.52301	0.0356666	0.25993391	2.4316109	17	—	—
685 Hermia	12.0	X	122.05561	80.84010	235.20667	3.64703	0.1965282	0.29480924	2.2358465	17	—	—
686 Gersuind	9.67	X	330.53637	89.09383	234.06472	15.68586	0.2673514	0.23652693	2.5894984	17	6 2.2	12.4
687 Tinette	11.71	X	348.56570	52.88497	334.34666	14.87732	0.2726745	0.21948216	2.7218858	17	10 7.8	14.0
688 Melanie	10.59	X	157.68551	139.40641	170.90831	10.24493	0.1397630	0.22252111	2.6970474	17	—	—
689 Zita	12.15	X	228.91474	188.31573	168.16390	5.74179	0.2290587	0.27943309	2.3171323	17	3 18.5	15.9
690 Wratislavia	8.02	X	124.26386	114.76411	253.16046	11.26630	0.1814730	0.17676187	3.1444425	17	1 9.8	12.6
691 Lehigh	9.2	X	264.81168	304.50533	87.98788	13.01324	0.1224559	0.18870325	3.0103464	17	6 22.3	13.6
692 Hippodamia	9.18	X	210.66011	54.24255	63.47783	26.07649	0.1692634	0.15831341	3.3842121	17	8 19.3	15.1
693 Zerbinetta	9.5	X	219.39281	288.30755	351.86956	14.19518	0.0320391	0.19526188	2.9425537	17	—	—
694 Ekard	9.17	X	290.91994	111.72527	230.00564	15.88793	0.2321030	0.22561467	2.6723366	17	4 17.8	13.5
695 Bella	9.30	X	280.81484	79.98930	275.53701	13.84600	0.1592949	0.24350714	2.5397731	17	5 10.7	13.2
696 Leonora	9.4	X	17.50550	104.06047	299.50800	13.03490	0.2507698	0.17458103	3.1705748	17	—	—
697 Galilea	9.63	X	143.43182	333.13056	15.54082	15.14332	0.1564076	0.20173321	2.8792836	17	1 1.5	14.1
698 Ernestina	10.9	X	66.15737	99.41365	40.63797	11.53437	0.1101498	0.20276635	2.8694949	17	3 25.5	14.5
699 Hela	11.72	X	97.35577	91.44723	242.54794	15.29871	0.4009786	0.23351892	2.6116883	17	—	—
700 Auravictrix	11.0	X	120.98762	101.73666	96.82260	6.78945	0.1037418	0.29607347	2.2294773	17	8 19.7	13.8
701 Oriola	9.25	X	248.13546	327.15179	243.73651	7.14272	0.0331643	0.18835474	3.0140585	17	—	—
702 Alauda	7.25	X	311.57650	349.49176	289.77345	20.58873	0.0181624	0.17256158	3.1952632	17	4 3.1	12.2
703 Noëmi	12.5	X	107.57546	174.50373	213.76710	2.45787	0.1378584	0.30734990	2.1746064	17	—	—
704 Interamnia	5.94	-0.02	349.92343	95.12039	280.29201	17.30635	0.1544872	0.18425961	3.0585526	17	9 20.9	10.1
705 Erminia	8.39	X	67.11987	101.88962	2.89695	25.04278	0.0485867	0.19716932	2.9235453	17	2 12.8	12.6
706 Hirundo	11.0	X	266.04104	30.94827	325.37210	14.42834	0.1939367	0.21856047	2.7295327	17	4 20.9	15.6
707 Steina	12.1	X	117.78362	90.47150	281.95554	4.27097	0.1086306	0.30620567	2.1800204	17	—	—
708 Raphaela	10.61	X	99.54827	196.98031	355.19361	3.49068	0.0864274	0.22597651	2.6694831	17	7 12.4	14.2
709 Fringilla	9.04	X	294.16140	19.11497	324.39778	16.26130	0.1120910	0.19803402	2.9150288	17	5 22.2	13.5
710 Gertrud	11.1	X	14.33330	99.40090	140.18960	1.75089	0.1334779	0.17804080	3.1293660	17	5 12.9	14.7
711 Marmulla	11.7	X	182.93080	300.29423	357.08557	6.09167	0.1955367	0.29459571	2.2369268	17	—	—
712 Boliviana	8.32	0.03	314.44207	181.58838	230.82260	12.76459	0.1871256	0.23851998	2.5750532	17	9 8.9	11.5
713 Luscinia	8.97	X	196.88298	137.45193	217.62676	10.36757	0.1617251	0.15735335	3.3979636	17	3 3.9	14.7
714 Ulula	9.1	X	226.37106	231.82141	233.84454	14.27078	0.0572663	0.24420846	2.5349083	17	8 9.8	13.0
715 Transvaalia	10.0	X	276.95817	300.76380	46.08258	13.82037	0.0825839	0.21402346	2.7679726	17	5 10.5	13.8
716 Berkeley	10.84	X	286.51988	57.61243	145.97898	8.48107	0.0853395	0.20894225	2.8126685	17	—	—
717 Wisibada	11.10	X	333.57562	24.49873	343.58182	1.64584	0.2626090	0.17717670	3.1395324	17	8 8.9	14.2
718 Erida	9.6	X	78.90563	174.40876	38.53679	6.92953	0.1996100	0.18454031	3.0554503	17	8 3.3	13.8
719 Albert	15.5	X	270.45572	156.11659	183.91803	11.57357	0.5467614	0.22980900	2.6397210	17	3 19.2	20.8
720 Bohlinia	9.6	X	72.73826	116.49572	35.71092	2.35511	0.0184505	0.20076065	2.8885750	17	4 6.4	13.6

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
721 Tabora	9.26	X	278.00703	352.79157	38.40731	8.32255	0.1161357	0.14730497	3.5507857	17	7 11.2	14.4
722 Frieda	12.4	X	99.68636	257.45030	45.68278	5.63863	0.1446404	0.30788411	2.1720902	17	12 17.7	15.4
723 Hammonia	10.0	X	145.67404	247.92191	163.33958	4.99268	0.0534099	0.18994799	2.9971806	17	3 9.3	14.1
724 Hapag	13.9	X	175.85083	205.71850	204.25840	11.71463	0.2498237	0.25602075	2.4563256	17	4 14.2	18.0
725 Amanda	11.81	X	235.60316	323.37128	68.68376	3.79030	0.2210419	0.23885624	2.5726359	17	5 11.7	16.1
726 Joëlla	10.57	X	299.20334	113.23441	241.98588	15.43539	0.2845143	0.23981150	2.5657995	17	5 17.5	14.1
727 Nipponia	9.6	X	306.79779	274.84538	133.06768	15.05913	0.1059086	0.23968727	2.5666860	17	9 11.7	12.8
728 Leonisis	13.0	X	73.98274	55.41525	82.64537	4.25668	0.0879995	0.29122720	2.2541428	17	3 5.1	15.2
729 Watsonia	9.31	X	309.01101	88.42608	124.38538	18.04265	0.0971992	0.21505311	2.7591304	17	—	—
730 Athanasia	13.7	X	119.28964	123.43596	95.07928	4.23450	0.1775707	0.29328842	2.2435690	17	9 22.9	17.0
731 Sorgia	9.62	X	10.23903	288.64718	46.15410	10.68927	0.1403488	0.19079276	2.9883270	17	9 19.7	13.1
732 Tjilaki	10.4	X	104.56189	64.11350	173.36205	10.99412	0.0434263	0.25600698	2.4564137	17	9 11.0	13.6
733 Mocia	9.05	X	121.51190	189.94036	341.00289	20.29353	0.0594346	0.15742548	3.3969256	17	7 18.5	14.3
734 Benda	9.9	X	234.92443	66.67487	3.15025	5.80636	0.0997469	0.17661393	3.1461982	17	7 10.7	14.7
735 Marghanna	9.55	X	127.86300	309.95445	42.97824	16.88413	0.3224539	0.21884367	2.7271774	17	1 6.3	13.6
736 Harvard	11.64	X	86.89265	200.68634	135.93399	4.37565	0.1656298	0.30165125	2.2019086	17	—	—
737 Areqipa	8.81	X	119.44175	134.29564	184.66999	12.36839	0.2449663	0.23646353	2.5899613	17	—	—
738 Alagasta	10.13	X	220.80625	42.03049	132.10779	3.53407	0.0548297	0.18618488	3.0374312	17	11 5.4	14.5
739 Mandeville	8.50	X	3.73018	45.53176	136.60321	20.65745	0.1438037	0.21754915	2.7379853	17	1 23.9	11.8
740 Cantabia	9.1	X	207.76519	47.94054	116.08921	10.84404	0.1102280	0.18478335	3.0527705	17	10 9.5	14.0
741 Botolphia	10.0	X	97.02797	62.08603	100.71474	8.41384	0.0708285	0.21986965	2.7186869	17	5 28.7	13.6
742 Edisona	9.55	X	140.82146	284.14886	64.21596	11.21934	0.1185876	0.18874813	3.0098692	17	—	—
743 Eugenisis	10.2	X	232.62210	187.19910	228.97497	4.83463	0.0591889	0.21125156	2.7921330	17	6 20.3	14.2
744 Aguntina	10.21	X	156.94930	28.75531	142.66636	7.71511	0.1180121	0.17451328	3.1713954	17	8 25.3	15.0
745 Mauritia	10.5	X	299.43114	24.43107	125.70470	13.31930	0.0404090	0.16735168	3.2612393	17	—	—
746 Marlu	10.00	X	240.47029	306.94928	2.01227	17.50474	0.2382763	0.17986231	3.1082022	17	2 18.9	15.5
747 Winchester	7.69	X	134.44736	275.93094	129.92382	18.13060	0.3398518	0.18913086	3.0058072	17	3 28.1	13.0
748 Simeisa	9.01	X	198.06237	177.95474	265.46932	2.25887	0.1876578	0.12581685	3.9443627	17	6 20.8	15.4
749 Malzovia	11.82	X	356.02374	128.83697	109.76757	5.39398	0.1732713	0.29326214	2.2437031	17	3 4.5	14.1
750 Oskar	12.13	X	177.24403	72.10688	69.70731	3.95097	0.1289358	0.25792725	2.4442065	17	8 7.8	15.8
751 Faina	8.66	0.08	51.25604	302.50967	78.85545	15.60699	0.1530120	0.24199667	2.5503304	17	—	—
752 Sulamitis	10.3	X	98.77010	24.01836	85.13003	5.95987	0.0738910	0.25489586	2.4635470	17	3 14.0	13.3
753 Tiflis	10.21	X	97.71966	203.00077	61.35136	10.08951	0.2210597	0.27724013	3.2393352	17	11 3.1	13.6
754 Malabar	9.19	X	42.47448	302.89640	180.04945	24.56402	0.0480541	0.19089785	2.9872302	17	1 19.9	13.6
755 Quintilla	9.81	X	120.81439	43.66542	176.70135	3.24251	0.1377443	0.17370331	3.1812465	17	9 18.6	14.7
756 Lilliana	9.9	X	350.42863	4.97036	208.08008	20.36025	0.1493944	0.17236853	3.1976485	17	2 20.6	14.3
757 Portlandia	10.20	X	241.42342	44.10587	22.51432	8.16954	0.1096207	0.26968441	2.3726417	17	7 6.9	13.7
758 Mancunia	8.16	X	330.27793	314.89142	106.19124	5.60962	0.1507887	0.17297846	3.1901274	17	10 29.1	11.9
759 Vinifera	10.6	X	206.84247	0.94204	318.41955	19.90812	0.2062067	0.23272242	2.6176439	17	1 24.8	15.1
760 Massinga	7.96	X	359.95062	200.90086	331.65751	12.53230	0.2323248	0.17631673	3.1497327	17	1 11.3	11.8
761 Brendelia	10.83	X	196.44327	298.03167	23.82964	2.16042	0.0651878	0.20356429	2.8619913	17	1 15.3	15.1
762 Pulcova	8.28	X	58.75276	189.74956	305.69767	13.07918	0.1041904	0.17563132	3.1579220	17	3 4.1	12.5
763 Cupido	12.5	X	345.44692	89.11090	289.82839	4.08194	0.1665947	0.29386376	2.2406397	17	10 1.1	14.2
764 Gedania	9.6	X	71.06791	155.68969	258.99035	10.03364	0.0987941	0.17297049	3.1902254	17	—	—
765 Mattiaca	12.3	X	184.45131	71.49358	326.46366	5.53168	0.2836951	0.24230035	2.5481991	17	4 7.1	16.8
766 Moguntia	10.15	X	229.84118	71.58070	7.83729	10.08982	0.0965581	0.18792735	3.0186265	17	7 18.5	14.9
767 Bondia	10.1	X	318.45557	269.09334	79.32801	2.41209	0.1814741	0.17877399	3.1208040	17	6 27.3	13.8
768 Struveana	10.21	X	210.11511	16.71368	38.90910	16.27419	0.2120910	0.17730491	3.1380189	17	5 22.2	15.7
769 Tatjana	9.0	X	160.79591	253.87237	38.48773	7.36918	0.1860870	0.17471269	3.1689819	17	—	—
770 Bali	10.9	X	119.07823	18.06894	44.69716	4.38497	0.1503639	0.29764785	2.2216086	17	2 5.1	13.1
771 Libera	10.49	X	359.45962	227.34534	218.19095	14.93672	0.2479068	0.22831121	2.6512533	17	—	—
772 Tanete	8.33	X	239.40740	146.20989	63.82798	28.85896	0.0922099	0.18968764	2.9999224	17	12 30.9	13.0
773 Irmintraud	9.1	X	301.74898	331.89650	322.34162	16.66482	0.0791487	0.20386108	2.8592130	17	3 28.2	13.4
774 Armor	8.8	X	314.94744	28.25598	250.12278	5.56344	0.1681042	0.18506857	3.0496332	17	3 21.8	13.1
775 Lumière	10.2	X	310.65567	167.20630	297.74547	9.28834	0.0712558	0.18850284	3.0124796	17	11 28.2	14.2
776 Berbericia	7.68	0.34	314.35843	307.06617	79.72643	18.23611	0.1648565	0.19641422	2.9310334	17	8 19.8	11.5
777 Gutemberga	9.8	X	269.85654	263.47455	283.27936	12.93863	0.1084131	0.17028994	3.2236166	17	—	—
778 Theobalda	9.66	X	93.22585	134.61422	321.59904	13.66784	0.2509574	0.17294686	3.1905161	17	3 25.5	14.2
779 Nina	7.9	X	74.52696	49.31090	283.73320	14.57867	0.2272556	0.22665628	2.6641431	17	12 29.7	11.9
780 Armenia	9.0	X	58.27968	214.28081	144.84794	19.08414	0.0971564	0.17934336	3.1141953	17	12 21.4	13.7
781 Kartvelia	9.5	X	130.67517	156.06374	138.09599	19.14886	0.1162210	0.17065990	3.2189562	17	12 23.0	14.8
782 Montefiore	11.3	X	73.75117	81.48069	80.47551	5.26117	0.0390216	0.30622155	2.1799451	17	4 2.4	13.6
783 Nora	11.1	X	222.00771	154.71380	142.12387	9.34237	0.2301509	0.27500589	2.3419344	17	—	—
784 Pickeringia	9.3	X	276.20352	238.25015	14.95130	12.29026	0.2425808	0.18097938	3.0953991	17	1 10.2	14.6
785 Zwetana	9.45	X	4.00925	131.55488	71.87113	12.76964	0.2109925	0.23930219	2.5694387	17	2 9.7	12.4
786 Bredichina	8.65	X	93.76583	133.37836	89.78036	14.51759	0.1604981	0.17417466	3.1755045	17	9 1.5	13.5
787 Moskva	9.7	X	116.04739	126.08278	183.88770	14.85152	0.1301252	0.24363649	2.5388741	17	—	—
788 Hohensteina	8.7	X	243.63512	48.57595	177.83500	14.33715	0.1330336	0.17843154	3.1247957	17	—	—
789 Lena	11.2	X	154.80045	43.99715	232.62383	10.78157	0.1473819	0.22390761	2.6859019	17	12 27.9	15.6
790 Pretoria	8.00	X	149.74692	38.56656	252.02922	20.53096	0.1516274	0.15647669	3.4106431	17	12 31.3	13.7
791 Ani	9.25	X	214.42260	201.49971	130.00259	16.37533	0.1952598	0.17870898	3.1215608	17	2 21.4	14.6
792 Metcalfia	10.33	X	47.68334	227.88792	265.10190	8.61629	0.1302489	0.23193885	2.6235361	17	1 26.7	13.3
793 Arizona	10.26	X	92.85229	308.84771	36.05411	15.78825	0.1251958	0.21090971	2.7951492	17	—	—
794 Irenaea	11.3	X	212.77654	131.47200	160.45236	5.41887	0.2965757	0.17822988	3.1271524	17	1 6.1	17.1
795 Fini	9.9	X	349.91052	190.61878	17.39626	19.06039	0.1300598	0.21615613	2.7497361	17	2 22.1	13.7
796 Sarita	9.12	X	33.11798	329.67161	33.19234	19.05238	0.3202406	0.23044741	2.6348435	17	—	—
797 Montana	10.34	X	326.94499	355.06662	238.33200	4.51097	0.0614700	0.24408570	2.5357581	17	2 10.4	13.7
798 Ruth	9.5	X	42.04271	42.23973	214.26917	9.23943	0.0356950	0.18837654	3.0138260	17	7 11.4	13.7
799 Gudula	10.2	X	228.74833	238.80793	164.86959	5.28222	0.0222529	0.24331286	2.5411248	17	5 30.0	13.6
800 Kressmannia	11.61	X	77.41286	347.61216	325.17958	4.26196	0.2014909	0.30350621	2.1929278	17	12 12.2	1

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
801 Helwerthia	11.55 ^m	X	141.63030	334.90849	185.97277	14.13003	0.0781167	0.23453542	2.6041366	17	7 18.5	15.5
802 Epyaxa	12.7	X	222.05697	115.64918	7.83394	5.20265	0.0788874	0.30283081	2.1961871	17	9 3.4	15.6
803 Picka	9.4	X	164.40848	60.77227	250.96706	8.67545	0.0651354	0.17243978	3.1967676	17	—	—
804 Hispania	7.84	0.18	359.99381	344.65819	347.61009	15.39458	0.1398325	0.20611176	2.8383603	17	8 25.2	10.9
805 Hormuthia	9.82	X	201.62980	132.29571	166.44209	15.72843	0.1874341	0.17286430	3.1915318	17	1 4.4	15.4
806 Gyldenia	10.2	X	314.67422	119.65445	43.98757	14.24068	0.0751448	0.17149491	3.2084988	17	—	—
807 Ceraskia	10.56	X	263.08940	337.56436	132.21684	11.31744	0.0657828	0.18798840	3.0179730	17	10 8.9	14.9
808 Merxia	9.8	X	97.31991	274.71507	181.06385	4.72370	0.1268017	0.21636967	2.7479266	17	3 7.6	13.3
809 Lundia	12.2	X	191.09321	196.17926	154.57830	7.14771	0.1925926	0.28567410	2.2832606	17	2 3.9	15.7
810 Atossa	12.6	X	251.94952	195.73137	152.70799	2.61182	0.1801457	0.30634669	2.1793513	17	3 25.4	15.9
811 Nauheima	10.7	X	276.65509	177.52089	130.85506	3.13624	0.0718872	0.19964186	2.8993567	17	3 27.7	15.0
812 Adele	11.8	X	180.14581	352.62580	7.34835	13.32018	0.1660227	0.22716922	2.6601312	17	2 19.8	16.1
813 Baumeia	11.5	X	288.09073	316.55343	51.94728	6.29743	0.0258814	0.29738795	2.2229028	17	6 23.5	14.1
814 Tauris	8.74	X	70.96258	296.71323	88.78951	21.82365	0.0736998	0.17602802	3.1531758	17	—	—
815 Coppelja	10.7	X	166.21604	58.88774	57.06054	13.86830	0.0762771	0.22747783	2.6577248	17	6 19.4	14.7
816 Juliana	10.4	X	179.78253	21.06740	127.86338	14.32800	0.1094063	0.18946886	3.0022313	17	8 20.8	15.1
817 Annika	10.6	X	184.66638	285.06845	125.50632	11.33031	0.1793283	0.23631162	2.5910711	17	4 26.1	15.0
818 Kapteynia	9.3	X	108.48263	292.88057	70.81699	15.66589	0.0945866	0.17477724	3.1682015	17	—	—
819 Barnardiana	12.0	X	304.21120	306.22672	333.15189	4.89626	0.1419610	0.30246432	2.1979608	17	2 19.4	14.8
820 Adriana	10.4	X	355.50819	193.35289	118.46170	5.93382	0.0496878	0.17802949	3.1294985	17	7 20.7	14.5
821 Fanny	11.84	X	296.67080	33.02044	209.76255	5.40008	0.2127563	0.21363770	2.7713037	17	1 8.4	16.2
822 Lalage	12.18	X	51.50951	247.08187	210.08331	0.71617	0.1544708	0.29094250	2.2556131	17	—	—
823 Sisigambis	11.2	X	295.72160	218.56488	255.01646	3.64557	0.0898866	0.29765376	2.2215792	17	11 30.6	13.4
824 Anastasia	10.41	X	169.63340	142.00213	141.39135	8.12609	0.1373155	0.21119619	2.7926210	17	—	—
825 Tanina	11.50	X	176.10555	111.55858	101.41109	3.39932	0.0747806	0.29673949	2.2621401	17	11 10.2	14.5
826 Henrika	11.6	X	191.11433	36.87532	230.23575	7.10672	0.2055812	0.22065143	2.7122614	17	—	—
827 Wolfiana	13.1	X	145.31435	195.30610	172.91753	3.42309	0.1569996	0.28736575	2.7429111	17	1 1.1	15.7
828 Lindemannia	10.33	X	322.52195	292.95693	1.85011	1.12569	0.0280791	0.17294358	3.1905564	17	5 16.1	14.8
829 Academia	11.0	X	88.58141	41.09809	352.50014	8.28388	0.0998014	0.23794039	2.5792332	17	—	—
830 Petropolitana	9.10	X	128.65969	88.22669	340.70296	3.80754	0.0617688	0.17080848	3.2170891	17	3 15.2	13.7
831 Stateira	13.1	X	210.76312	225.17052	178.07677	4.83648	0.1460158	0.29953238	2.2122806	17	4 28.8	16.3
832 Karin	11.18	X	281.52248	122.36301	253.92599	1.00552	0.0804592	0.20339660	2.8635642	17	6 26.1	14.9
833 Monica	11.1	X	97.37930	35.85892	353.16000	9.78885	0.1211632	0.18886977	3.0085767	17	—	—
834 Burnhamia	9.39	X	34.55361	91.06647	182.70764	3.97874	0.2009992	0.17354278	3.1832080	17	8 10.6	13.0
835 Olivia	11.5	X	194.10886	64.06846	308.93944	3.69181	0.0877466	0.17004615	3.2266970	17	3 20.2	16.4
836 Jole	13.2	X	36.38100	179.74239	199.80590	4.84745	0.1770123	0.30412283	2.1899626	17	—	—
837 Schwarzschilda	12.3	X	334.73089	173.22800	200.04846	6.73712	0.0413311	0.28288782	2.9822866	17	9 8.7	14.9
838 Seraphina	10.09	X	176.27639	116.62108	240.09742	10.41638	0.1337361	0.19974106	2.8983967	17	2 6.2	14.8
839 Valborg	10.6	X	356.07349	339.74162	338.20000	12.60366	0.1516108	0.23310284	2.6147952	17	7 24.9	13.4
840 Zenobia	10.0	X	144.27380	10.31705	272.75900	9.98675	0.1000402	0.17784192	3.1316986	17	12 21.5	14.9
841 Arabella	12.92	X	188.03380	120.03485	354.72415	3.79000	0.0698854	0.29109531	2.2548236	17	7 10.5	15.9
842 Kerstin	10.6	X	182.22781	351.64560	5.68096	14.54581	0.1203671	0.16925457	3.2367497	17	2 26.1	15.8
843 Nicolaia	13.8	X	145.92688	317.10179	4.09004	8.00130	0.2100182	0.28653644	2.2786772	17	—	—
844 Leontina	9.6	X	280.85282	352.57866	348.71164	8.77782	0.0687987	0.17195648	3.2027547	17	5 13.4	14.4
845 Naëma	10.2	X	69.49017	295.16726	43.15045	12.61032	0.0694269	0.19557510	2.9394112	17	12 4.4	14.3
846 Lipperta	10.26	X	98.95194	129.20684	261.43023	0.26434	0.1821112	0.17835188	3.1257262	17	1 6.5	14.3
847 Agnia	10.29	X	293.16261	130.21606	270.93219	2.48158	0.0956135	0.21241667	2.7819137	17	8 10.4	13.9
848 Inna	11.3	X	237.60045	124.95420	207.78188	1.05004	0.1648550	0.17941426	3.1133748	17	3 12.2	16.4
849 Ara	8.10	X	146.65401	63.27275	228.36778	19.53065	0.1999209	0.17651131	3.1474175	17	—	—
850 Altona	9.6	X	129.44763	134.59745	121.14266	15.54021	0.1249487	0.18953461	3.0015370	17	11 13.4	14.6
851 Zeissia	11.62	X	220.02791	7.25718	141.20305	2.39189	0.0897387	0.29626040	2.2285394	17	10 4.3	14.4
852 Wladilena	10.0	X	256.30663	282.24584	27.30305	23.01982	0.2745734	0.27139015	2.3626896	17	2 22.8	14.6
853 Nansenia	11.67	X	268.94279	59.96729	182.86322	9.21733	0.1057345	0.28034597	2.3120994	17	—	—
854 Frostia	12.0	X	236.77048	84.30344	190.60065	6.08842	0.1741563	0.27046130	2.3680960	17	—	—
855 Newcombia	11.8	X	300.13417	233.97200	17.13400	10.88564	0.1791759	0.27152466	2.3619092	17	1 15.5	15.6
856 Backlunda	10.69	X	238.27652	73.12911	125.56605	14.31899	0.1185665	0.25928962	2.4356374	17	12 25.2	14.0
857 Glasenappia	11.32	X	354.29871	239.14016	82.91784	5.30081	0.0882892	0.30407236	2.1902049	17	7 23.2	13.2
858 El Djezaïr	10.2	X	185.83951	179.11064	67.19187	8.87378	0.1021511	0.20908250	2.8114105	17	12 21.5	14.6
859 Bouzaréah	9.7	X	147.76566	20.02163	35.76432	13.52218	0.1059371	0.16943727	3.2344225	17	3 30.9	14.6
860 Ursina	10.26	X	332.01394	21.62062	309.36711	13.29738	0.1060677	0.21077440	2.7963453	17	7 4.5	13.8
861 Aïda	9.7	X	195.84000	193.66929	115.02727	8.05041	0.1027627	0.17731412	3.1379101	17	1 7.0	14.4
862 Franzia	9.8	X	203.58049	121.24159	300.02242	13.88589	0.0817314	0.21003250	2.8029265	17	5 21.9	14.3
863 Benkoela	9.02	X	121.18462	96.31212	116.94560	25.41397	0.0294811	0.17205924	3.2014794	17	9 3.8	13.9
864 Aase	12.87	X	87.87742	193.93554	163.15198	5.45055	0.1910412	0.30040614	2.2079887	17	—	—
865 Zubaïda	11.7	X	290.10942	301.50698	177.06904	13.34174	0.1938441	0.26221355	2.4174971	17	11 10.9	14.5
866 Fatme	9.5	X	218.94931	260.42426	91.13795	8.64700	0.0529209	0.17803951	3.1293811	17	3 24.9	14.3
867 Kovacia	11.4	X	290.29524	69.99435	46.82478	5.97510	0.1284276	0.18349720	3.0670187	17	11 8.1	15.4
868 Lova	10.22	X	2.36032	286.99298	115.79070	5.83749	0.1493375	0.22176370	2.7031849	17	12 6.8	13.1
869 Mellena	11.9	X	226.67286	107.24851	154.91417	7.83775	0.2201840	0.22354158	2.6888330	17	—	—
870 Manto	11.6	X	65.13905	197.01063	120.80427	6.19105	0.2646054	0.27851982	2.3221948	17	12 11.6	14.9
871 Amneris	12.6	X	99.32398	66.33219	158.02528	4.25074	0.1198404	0.29756641	2.2220140	17	8 28.2	15.1
872 Holda	9.91	X	95.47832	17.59370	194.73885	7.37529	0.0791353	0.21836171	2.7311888	17	7 30.8	13.7
873 Mechthild	11.49	X	176.61732	110.16672	150.03739	5.27386	0.1487606	0.23142369	2.6274281	17	12 29.6	15.7
874 Rotraut	10.1	X	354.28556	10.95146	190.69317	11.14811	0.0802910	0.17583877	3.1554378	17	2 22.2	14.4
875 Nympe	11.2	X	140.02326	117.34438	196.09348	14.57510	0.1517808	0.24168013	2.5525568	17	—	—
876 Scott	10.89	X	346.60800	211.54404	150.96705	11.36010	0.1133855	0.18878279	3.0095007	17	9 11.2	14.5
877 Walküre	10.71	X	331.11794	276.05463	116.38147	4.25503	0.1606820	0.25135846	2.4866064	17	9 24.3	13.0
878 Mildred	14.7	X	307.39647	190.28286	172.84399	2.06530	0.2262733	0.27178716	2.3603882	17	6 13.1	17.6
879 Ricarda	11.0	X	264.83148	96.94713	269.86125	13.67980	0.1543663	0.24471285	2.5314238	17	5 8.4	14.9
880 Herba	11.46	X	56.93542	101.08688	262.61220	15.14654	0.3232149	0.18987931	2.9979033	17		

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
881 Athene	11.8 ^m	X	248.17711 ^o	41.15597 ^o	277.09022 ^o	14.18238 ^o	0.2062036	0.23325859	2.6136311	17	2 16.4	16.4
882 Svetlana	10.6	X	333.14659	126.59346	256.31015	6.12490	0.2663421	0.17839094	3.1252698	17	8 25.1	13.8
883 Matteredania	12.59	X	329.23947	42.46956	285.48842	4.71495	0.1982909	0.29436553	2.2380928	17	5 26.6	15.0
884 Priamus	8.81	X	241.06348	335.49747	301.55897	8.91472	0.1219357	0.08355798	5.1817618	17	1 30.9	16.1
885 Ulrike	10.7	X	136.71794	204.33953	149.05003	3.30451	0.1871529	0.18126958	3.0920945	17	1 7.5	15.2
886 Washingtonia	9.3	X	287.15499	302.11685	58.89282	16.86616	0.2698100	0.17468236	3.1693487	17	5 21.3	14.1
887 Alinda	13.4	-0.12	41.87305	350.36225	110.53701	9.35601	0.5671312	0.25250800	2.4790538	17	—	—
888 Parysatis	9.51	X	153.51207	297.86834	124.02869	13.83592	0.1926944	0.22070050	2.7118594	17	4 15.5	14.0
889 Erynia	11.0	X	85.99458	277.70603	132.70720	8.09951	0.2034716	0.25755787	2.4465429	17	—	—
890 Waltraut	10.78	X	249.53148	90.34031	160.67888	10.87246	0.0599227	0.18772376	3.0208087	17	—	—
891 Gunhild	10.0	X	27.10936	294.02251	105.86020	13.55593	0.0300005	0.20375240	2.8602296	17	12 24.6	13.8
892 Seeligeria	9.7	X	152.08396	286.72357	175.91256	21.33163	0.1038569	0.17011088	3.2258783	17	5 29.2	15.0
893 Leopoldina	9.47	X	106.33264	222.97464	145.04616	17.02046	0.1496538	0.18511428	3.0491311	17	—	—
894 Erda	9.6	X	331.61879	115.95410	190.62700	12.73634	0.1100746	0.17904030	3.1177086	17	6 3.2	13.8
895 Helio	8.3	X	310.09625	178.02211	264.69018	26.07558	0.1454381	0.17192580	3.2031357	17	10 13.3	13.0
896 Sphinx	11.6	X	286.48214	1.96805	254.19261	8.18902	0.1636465	0.28529772	2.2852682	17	1 3.3	15.1
897 Lysistrata	10.37	X	185.24443	24.39629	257.97397	14.32910	0.0947707	0.24330764	2.5411612	17	—	—
898 Hildegard	11.6	X	359.25854	49.77617	241.56152	10.08743	0.3709815	0.21849606	2.7300691	17	5 19.9	13.1
899 Jokaste	10.14	X	309.52087	127.67957	252.42855	12.46737	0.2005125	0.19891655	2.9064004	17	7 18.3	13.9
900 Rosalinde	11.74	X	179.86653	121.98276	182.29463	11.56323	0.1633524	0.25347196	2.4727645	17	—	—
901 Brunsia	11.35	X	309.46409	68.34182	265.08156	3.44648	0.2204775	0.29712189	2.2242296	17	4 30.2	14.1
902 Probitas	12.0	X	292.97572	28.60657	353.06938	6.34646	0.1797517	0.25764271	2.4460058	17	6 29.1	15.2
903 Nealley	10.0	X	297.55645	234.96425	159.40535	11.78021	0.0446219	0.16910348	3.2386773	17	8 16.1	14.4
904 Rockefelleria	10.4	X	348.12513	251.27430	198.13645	15.16095	0.0884167	0.19027477	2.9937480	17	—	—
905 Universitas	11.59	X	359.91424	343.24993	37.17845	5.32605	0.1538097	0.29878616	2.2159625	17	11 9.7	13.2
906 Repsolda	9.3	X	80.16999	295.06299	40.20673	11.78410	0.0859998	0.20018216	2.8941373	17	12 16.7	13.5
907 Rhoda	9.76	X	333.96869	87.74229	43.10841	19.56063	0.1603840	0.21029137	2.8006258	17	—	—
908 Buda	10.69	X	103.65714	23.78980	85.55653	13.41025	0.1472537	0.25331613	2.4737786	17	4 7.2	14.0
909 Ulla	8.95	X	32.02700	233.24547	146.36029	18.78809	0.0901039	0.14757547	3.5464453	17	12 8.7	14.0
910 Anneliese	10.5	X	144.30850	208.24506	49.94379	9.20928	0.1534903	0.19679551	2.9272462	17	11 25.4	15.2
911 Agamemnon	7.89	X	219.59661	81.03645	338.00829	21.76287	0.0656455	0.08132826	5.2760440	17	6 21.6	15.3
912 Maritima	9.3	X	353.24253	88.95967	34.03246	18.34477	0.1752220	0.17772824	3.1330339	17	—	—
913 Otila	11.9	X	26.96693	188.57933	94.93244	5.80543	0.1703553	0.30258559	2.1973735	17	7 30.4	13.2
914 Palisana	8.76	X	173.57809	49.09022	255.79908	25.20955	0.2149480	0.25587787	2.4572399	17	—	—
915 Cosette	11.5	X	278.26537	39.54866	9.34112	5.54634	0.1401968	0.29649249	2.2273762	17	7 22.9	14.3
916 America	11.4	X	354.05386	41.76032	329.78835	11.09286	0.2372481	0.27107715	2.3645079	17	10 5.0	12.9
917 Lyka	11.6	X	273.82742	359.78744	343.41393	5.12574	0.2001993	0.26811624	2.3818842	17	4 10.1	15.2
918 Itha	10.6	X	69.82874	15.71110	330.46864	12.06651	0.1895327	0.20329191	2.8645472	17	—	—
919 Ilsebill	11.4	X	163.04351	154.51745	229.85179	8.16091	0.0836599	0.21333037	2.7739646	17	2 18.9	15.6
920 Rogeria	11.19	X	290.38027	268.64089	192.82987	11.58205	0.1061722	0.23211345	2.6222203	17	10 27.9	14.4
921 Jovita	10.0	X	156.64771	70.77462	204.91855	16.33569	0.1836962	0.17452205	3.1712892	17	12 23.7	15.6
922 Schlutia	12.0	X	90.33933	126.82956	205.18743	7.30237	0.1938759	0.22359501	2.6884047	17	—	—
923 Herluga	11.5	X	35.32739	201.13008	197.61661	14.47704	0.1967194	0.23318077	2.6142125	17	—	—
924 Toni	9.37	X	161.26604	219.05659	150.48877	8.99150	0.1561081	0.19568766	2.9382839	17	2 13.4	14.0
925 Alphonsina	8.33	X	339.90857	201.51856	299.59178	21.07679	0.0786573	0.22209428	2.7005018	17	—	—
926 Imhilde	10.5	X	265.48335	174.14341	49.00977	16.33391	0.1818673	0.19144791	2.9815056	17	—	—
927 Ratisbona	9.54	X	278.95434	170.08851	7.78628	14.58248	0.0862301	0.17023747	3.2242790	17	—	—
928 Hildrun	9.9	X	191.68761	21.95134	129.85790	17.65290	0.1491058	0.17757998	3.1347775	17	9 6.0	15.1
929 Algonde	11.7	X	315.18457	22.86579	231.38833	3.91258	0.1135323	0.29416370	2.2391164	17	2 2.6	14.7
930 Westphalia	11.2	X	132.07916	330.25418	340.98788	15.33440	0.1434460	0.26000888	2.4311435	17	—	—
931 Whittemora	9.26	X	166.04977	315.24677	111.05189	11.46669	0.2304547	0.17430337	3.1739411	17	5 7.8	14.8
932 Hoovertia	10.00	X	70.72819	48.92976	15.03275	8.12197	0.0903636	0.26188841	2.4194976	17	—	—
933 Susi	12.5	X	296.88061	13.15503	141.47558	5.53879	0.1653679	0.27042454	2.3683106	17	—	—
934 Thüringia	10.0	X	57.33978	64.27986	325.50575	14.07347	0.2187119	0.21647383	2.7470451	17	—	—
935 Clivia	12.9	X	78.25643	57.96273	346.50100	4.02510	0.1462327	0.29826995	2.2185185	17	—	—
936 Kunigunde	10.4	X	190.29052	254.19942	62.18288	2.36920	0.1776099	0.17802435	3.1295587	17	1 14.6	15.6
937 Bethgea	11.83	X	54.24031	72.53943	243.57003	3.69653	0.2171669	0.29559863	2.2318642	17	11 20.6	14.4
938 Chlosinde	11.3	X	89.16567	226.09665	119.06225	2.66933	0.1951088	0.17632286	3.1496597	17	—	—
939 Isberga	12.14	X	305.90049	6.23555	327.06930	2.58365	0.1764329	0.29264211	2.2468712	17	5 2.7	15.0
940 Kordula	9.55	X	243.05826	282.37604	66.34281	6.23581	0.1704078	0.15894721	3.3752098	17	4 9.7	15.0
941 Murray	11.55	X	307.02819	335.11587	52.32032	6.62578	0.1960994	0.21225216	2.7833509	17	7 29.8	15.0
942 Romilda	11.0	X	82.14650	319.80778	71.34767	10.57351	0.1715873	0.17573192	3.1567167	17	—	—
943 Begonia	9.77	X	131.07475	4.34155	113.77432	12.10744	0.2131542	0.17921723	3.1156563	17	6 4.7	14.8
944 Hidalgo	10.77	X	330.08950	56.68190	21.42209	42.52357	0.6609138	0.07163685	5.7417606	17	9 18.3	17.0
945 Barcelona	10.13	X	207.54095	162.04337	318.29997	32.89333	0.1633289	0.23040788	2.6351449	17	8 9.6	14.3
946 Poësia	10.42	X	210.80304	38.24372	69.65745	1.43143	0.1436884	0.17914621	3.1164797	17	7 29.9	15.3
947 Monterosa	9.9	X	147.59758	338.43043	48.32993	6.70809	0.2490570	0.21566361	2.7539209	17	3 1.7	14.3
948 Jucunda	11.5	X	90.80328	163.47229	357.10707	8.65683	0.1641440	0.18684863	3.0302336	17	6 1.8	15.8
949 Hel	9.8	X	169.20717	249.30584	321.19649	10.69882	0.1925685	0.18923697	3.0046834	17	10 17.9	15.1
950 Ahrensa	11.2	X	160.92548	348.21587	181.80813	23.47693	0.1582994	0.26979824	2.3719743	17	8 25.0	15.1
951 Gaspra	11.46	X	232.82556	129.94217	253.05671	4.10625	0.1734017	0.30001747	2.2098953	17	4 20.8	14.8
952 Caia	9.3	X	198.79482	355.53583	18.56877	10.02626	0.2349508	0.18987584	2.9979398	17	3 28.7	14.5
953 Painleva	10.1	X	191.55276	259.90961	36.43189	8.66694	0.1906029	0.21201203	2.7854522	17	—	—
954 Li	9.94	X	105.66479	151.42353	163.23968	1.16947	0.1725630	0.17791879	3.1307965	17	12 26.4	14.8
955 Alstede	10.7	X	28.51536	282.46222	351.48132	10.68826	0.2873057	0.23563068	2.5960606	17	8 10.3	12.6
956 Elisa	12.2	X	213.34610	125.34567	192.65943	5.96495	0.2052138	0.28299012	2.2976746	17	1 15.2	16.0
957 Camelia	9.9	X	3.49828	222.81823	232.87124	14.79403	0.0817879	0.19759359	2.9193588	17	—	—
958 Asplinda	10.71	X	28.80473	92.96075	343.13896	5.62992	0.1858273	0.12392385	3.9844293	17	—	—
959 Arne	10.7	X	272.86395	333.67253	58.52874	4.49741	0.2206296	0.17406080	3.1768892	17	6 20.1	15.5
960 Birgit	12.4	X	191.45360	87.91617	249.18664	3.02422	0.1659384	0.29239225	2.2481510	17	1 14.5	15.6

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
961 Gunnie	11.4 ^m	X	319.28278	284.94414	26.63103	10.99385	0.0906802	0.22301498	2.6930641	17	5 15.1	15.0
962 Aslög	11.52	X	148.36993	223.09509	145.63023	2.60338	0.0997383	0.19905841	2.9050194	17	1 23.1	15.7
963 Iduberga	12.49	X	134.16734	5.50752	62.47243	7.98251	0.1372495	0.29233269	2.2484564	17	3 9.9	15.2
964 Subamara	10.7	X	343.65602	10.02281	30.69480	9.04993	0.1201690	0.18502453	3.0501171	17	10 25.3	14.1
965 Angelica	10.1	X	346.77423	46.79115	41.45881	21.45990	0.2827100	0.17598527	3.1536864	17	—	—
966 Muschi	9.91	X	303.88597	178.13234	72.42531	14.41109	0.1318213	0.21991093	2.7183467	17	2 6.4	14.1
967 Helionape	11.8	X	37.53809	232.00134	82.35328	5.41281	0.1681754	0.29683204	2.2256773	17	10 16.9	13.8
968 Petunia	10.01	X	172.57890	297.64097	208.85473	11.59916	0.1373659	0.20322632	2.8651635	17	8 5.7	14.8
969 Leocadia	12.57	X	304.25217	91.47643	287.76518	2.29247	0.2059485	0.25513788	2.4619889	17	7 6.9	15.3
970 Primula	12.3	X	137.74282	94.65408	311.16396	5.02542	0.2708199	0.24025927	2.5626106	17	3 8.5	16.0
971 Alsatia	10.05	X	86.60632	6.26449	83.53875	13.77447	0.1605352	0.22945820	2.6424107	17	2 17.5	13.2
972 Cohnia	9.5	X	8.04236	93.78878	281.52230	8.36995	0.2350263	0.18433287	3.0577422	17	11 8.9	12.7
973 Aralia	10.0	X	252.05224	88.24873	348.45962	15.83037	0.1120024	0.17129124	3.2110417	17	8 9.8	14.9
974 Lioba	10.30	X	3.40056	302.30249	86.67534	5.45679	0.1116421	0.24439867	2.5335928	17	11 19.8	13.0
975 Perseverantia	10.41	X	86.78421	57.81554	38.72041	2.55948	0.0311060	0.20647328	2.8350462	17	2 13.8	14.2
976 Benjamina	9.22	X	232.14186	318.98431	243.75729	7.71321	0.1015684	0.17212119	3.2007112	17	12 13.9	13.9
977 Philippa	9.67	X	175.74150	73.26229	75.74857	15.17450	0.0268283	0.17910870	3.1169148	17	8 19.9	14.4
978 Aidamina	9.73	X	153.81717	132.91651	216.63334	21.64502	0.2339550	0.17235978	3.1977567	17	1 20.6	15.3
979 Ilsewa	9.7	X	307.93722	115.31910	230.62527	10.11199	0.1371691	0.17573310	3.1567026	17	6 15.5	14.1
980 Anacostia	7.85	0.06	44.47040	70.10906	285.80816	15.90473	0.2028981	0.21729899	2.7400863	17	12 19.1	11.5
981 Martina	10.57	X	127.89559	298.44956	46.07991	2.06565	0.2037325	0.18113389	3.0936386	17	—	—
982 Franklina	9.9	X	211.55669	351.13025	299.18779	13.65059	0.2346337	0.18363451	3.0654896	17	1 3.1	15.3
983 Guñila	9.58	X	34.33512	347.98245	250.69863	14.86947	0.0924440	0.17557818	3.1585592	17	6 13.4	13.6
984 Gretia	9.03	X	65.27100	55.49373	314.20848	9.09299	0.1974301	0.21004546	2.8028112	17	—	—
985 Rosina	12.7	X	92.83759	59.63566	290.32701	4.05641	0.2778267	0.28270146	2.2992385	17	—	—
986 Amelia	9.3	X	32.89603	265.71251	92.59963	14.81154	0.2022580	0.17759703	3.1345769	17	12 1.3	13.2
987 Wallia	9.5	X	33.04489	16.22819	322.67345	8.90750	0.2355851	0.17706297	3.1408766	17	11 5.8	13.3
988 Appella	11.5	X	343.99004	337.23684	41.72805	1.57481	0.2358137	0.17688276	3.1430096	17	9 21.1	14.5
989 Schwassmannia	11.9	X	307.40023	165.80944	243.40088	14.69919	0.2510149	0.22728604	2.6592197	17	8 10.6	15.5
990 Yerkes	11.7	X	307.15983	9.63006	353.95755	8.78596	0.2170086	0.22615417	2.6680849	17	6 19.9	15.3
991 McDonaldia	11.12	X	62.25080	254.66875	63.25329	2.06964	0.1581710	0.17690726	3.1427194	17	11 13.3	15.2
992 Swasey	10.5	X	207.77641	345.45457	212.24476	10.84392	0.0849781	0.18693368	3.0293144	17	11 16.3	15.0
993 Moultona	11.4	X	231.26241	249.72936	184.25811	1.77992	0.0485081	0.20377403	2.8600272	17	7 13.2	15.5
994 Otthild	10.30	X	9.11348	342.61286	2.36301	15.41084	0.1160586	0.24495829	2.5297326	17	9 26.5	12.7
995 Sternberga	10.2	X	39.27183	122.43300	221.74344	13.05443	0.1684562	0.23302279	2.6153939	17	11 22.9	13.4
996 Hilaritas	10.88	X	166.54813	147.10910	347.40049	0.65946	0.1404098	0.18163370	3.0879607	17	7 20.8	15.8
997 Priska	12.4	X	206.90974	51.49419	247.10797	10.50765	0.1833279	0.22619752	2.6677440	17	—	—
998 Bodea	11.5	X	341.83782	72.21960	301.19220	15.50275	0.2126920	0.17893976	3.1188763	17	9 1.7	15.1
999 Zachia	10.8	X	85.49287	127.98211	214.97087	9.76087	0.2170945	0.23353583	2.6115621	17	—	—
1000 Piazzia	10.6	X	243.13890	280.86450	323.74487	20.57263	0.2580807	0.17458612	3.1705132	17	—	—
1001 Gaussia	9.7	X	121.11217	142.51418	259.31523	9.29584	0.1262344	0.17139199	3.2097832	17	2 7.5	14.4
1002 Olbersia	10.9	X	64.58540	355.52058	343.75510	10.76731	0.1544019	0.21184284	2.7869351	17	12 14.6	15.0
1003 Lilofee	10.7	X	211.30522	317.42159	139.44762	1.84018	0.1599210	0.17719095	3.1393642	17	7 15.8	15.9
1004 Belopolskya	9.99	X	354.07250	215.07040	153.53737	2.97852	0.0874390	0.15699331	3.4031568	17	9 30.3	14.3
1005 Arago	9.9	X	206.34172	60.65967	349.17455	19.06034	0.1175531	0.17496712	3.1659090	17	5 8.5	15.2
1006 Lagrangea	11.3	X	283.16834	86.23089	294.59381	10.91651	0.3568957	0.17692204	3.1425444	17	5 30.9	16.5
1007 Pawlowia	11.2	X	25.34820	77.22518	307.11868	2.54235	0.1117315	0.22125658	2.7073137	17	12 14.6	14.3
1008 La Paz	10.6	X	70.92523	14.82155	20.55333	8.93620	0.0782578	0.18133034	3.0914038	17	—	—
1009 Sirene	13.9	X	11.51225	186.35060	229.45722	15.77469	0.4564486	0.23196833	2.6233138	17	—	—
1010 Marlene	10.6	X	265.91643	279.74297	98.74678	3.90705	0.1032585	0.19648319	2.9303474	17	6 7.6	14.7
1011 Laodamia	12.74	X	88.02303	353.34051	132.53464	5.49391	0.3506796	0.26633227	2.3925087	17	5 3.3	15.1
1012 Sarema	12.41	X	355.51075	24.78874	73.18814	4.03213	0.1346389	0.25239148	2.4798167	17	—	—
1013 Tombecka	10.12	X	95.02451	99.99197	27.24746	11.90143	0.2089265	0.22418174	2.6837119	17	4 26.0	13.5
1014 Semphrya	11.9	X	332.38878	233.24081	251.71417	2.26809	0.1994139	0.20998330	2.8033644	17	—	—
1015 Christa	9.03	X	198.00571	286.29800	120.17383	9.44166	0.0865837	0.17159014	3.2073117	17	5 7.9	14.1
1016 Anitra	11.9	X	176.00838	53.32029	8.85885	6.03524	0.1279385	0.29806161	2.2195522	17	4 14.5	15.0
1017 Jacqueline	11.0	X	58.27742	68.29876	118.95378	7.92748	0.0789601	0.23440638	2.6050922	17	5 4.8	14.2
1018 Arnolda	10.62	X	204.39658	342.97353	359.70078	7.64444	0.2453064	0.24326774	2.5414391	17	2 18.2	15.0
1019 Strackea	12.63	X	30.74167	121.91405	144.41488	26.97695	0.0710857	0.37294322	1.9114997	17	6 25.7	14.9
1020 Arcadia	12.1	X	335.27561	38.37000	180.72658	4.06083	0.0444869	0.21141738	2.7906728	17	2 15.1	16.0
1021 Flammario	8.98	X	327.30049	286.97942	115.44106	15.86905	0.2855158	0.21766055	2.7370510	17	9 17.5	11.7
1022 Olympiada	10.2	X	328.48137	124.79404	111.99024	21.05167	0.1750516	0.20976308	2.8053261	17	2 13.6	14.1
1023 Thomana	9.76	X	107.00294	194.18600	194.31898	10.07840	0.1018598	0.17489904	3.1667305	17	1 3.4	14.2
1024 Hale	10.8	X	133.09895	307.92834	58.86055	16.08907	0.2248334	0.20320368	2.8653764	17	1 21.7	15.2
1025 Riema	12.5	X	102.31367	349.05909	163.38771	26.86286	0.0394940	0.35402223	1.9790147	17	4 26.9	15.0
1026 Ingrid	12.7	X	292.54711	212.33826	104.58467	5.39938	0.1813692	0.29112083	2.2546919	17	3 29.0	15.9
1027 Aesculapia	10.8	X	156.88838	132.17129	29.34973	1.25374	0.1301759	0.17610313	3.1522791	17	8 13.8	15.8
1028 Lydina	9.43	X	315.33046	24.77038	62.83351	9.39362	0.1063737	0.15667118	3.4078200	17	11 9.1	13.8
1029 La Plata	10.88	X	46.28043	143.91263	29.91744	2.42639	0.0282521	0.20043533	2.8916998	17	3 30.5	14.6
1030 Vitja	10.3	X	3.03961	6.47912	187.87117	14.78571	0.1233991	0.17870600	3.1215955	17	2 20.3	14.3
1031 Arctica	9.56	X	279.56373	307.31183	218.91900	17.63479	0.0563841	0.18519459	3.0482495	17	12 31.5	14.1
1032 Pafuri	10.1	X	281.47635	189.50852	76.34240	9.47928	0.1435804	0.17815465	3.1280326	17	2 7.8	15.0
1033 Simona	11.1	X	268.12227	217.95700	188.95367	10.66441	0.1177235	0.18962356	3.0005983	17	7 13.4	15.7
1034 Mozartia	12.1	X	303.06886	18.80650	304.50100	3.97090	0.2629972	0.28387484	2.2928982	17	4 4.2	15.5
1035 Amata	10.2	X	277.25913	324.27063	1.93285	18.01129	0.1899641	0.17592497	3.1544070	17	4 5.1	15.2
1036 Ganymed	9.45	0.30	137.95809	132.46507	215.55216	26.69338	0.5337168	0.22683711	2.6627270	17	1 22.9	14.5
1037 Davidweilla	13.6	X	172.39694	169.51673	200.68237	5.90152	0.1910474	0.29099152	2.2553598	17	2 7.6	16.8
1038 Tuckia	10.82	X	340.93979	305.02056	57.76846	9.18405	0.2023778	0.12403850	3.9819736	17	8 28.5	15.4
1039 Sonneberga	11.5	X	281.22633	327.56032	221.72952	4.55571	0.0592327	0.22464761	2.6800004	17	—	—
1040 Klumpkea												

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1041 Asta	10.1 ^m	X	203.58894 ^o	343.95497 ^o	60.00109	13.93370 ^o	0.1432536	0.18288747 ^o	3.0738317	17	5 7.3	15.0
1042 Amazone	9.8	X	221.26182	296.18940	52.44023	20.70242	0.0891203	0.16895042	3.2406331	17	3 30.7	15.1
1043 Beate	9.6	X	254.99654	154.70906	159.31279	8.92567	0.0403162	0.18087661	3.0965715	17	3 16.4	14.1
1044 Teutonia	10.8	X	147.34510	228.44606	59.96146	4.25149	0.1441604	0.23843032	2.5756987	17	—	—
1045 Michela	13.0	X	205.49463	166.98469	267.71216	0.26477	0.1597627	0.27220482	2.3579731	17	6 6.2	16.4
1046 Edwin	10.6	X	15.49046	47.99965	10.74884	7.89913	0.0650856	0.19122522	2.9838199	17	—	—
1047 Geisha	11.86	X	256.95742	300.38629	78.22305	5.66674	0.1925392	0.29382047	2.2408598	17	5 10.3	15.2
1048 Feodosia	9.75	X	36.12286	183.30481	52.76615	15.80974	0.1807769	0.21831827	2.7315511	17	6 11.0	12.5
1049 Gotho	10.4	X	295.00302	41.24369	342.86036	15.10972	0.1358938	0.18119333	3.0929619	17	7 21.8	14.8
1050 Meta	12.2	X	186.88064	66.16671	342.36210	12.49692	0.1767502	0.23155966	2.6263994	17	4 15.8	16.7
1051 Merope	10.0	X	351.25275	152.97150	180.72293	23.50818	0.0992724	0.17106932	3.2138182	17	8 7.2	14.4
1052 Belgica	11.97	X	179.31651	297.73548	99.59551	4.69528	0.1430475	0.29459455	2.2369327	17	3 21.3	15.1
1053 Vigdis	12.2	X	233.44862	42.59458	17.58995	8.34075	0.0966130	0.23320375	2.6140408	17	6 21.6	16.2
1054 Forsytia	10.4	X	165.01022	294.18791	85.88746	10.84862	0.1353192	0.19711429	2.9240894	17	3 4.5	15.1
1055 Tynka	12.0	X	129.33107	176.63919	147.15371	5.27783	0.2083385	0.30242831	2.1981353	17	—	—
1056 Azalea	11.7	X	226.31623	212.38533	104.16885	5.42673	0.1783866	0.29599144	2.2298892	17	1 22.6	15.1
1057 Wanda	10.96	X	224.08160	114.19596	257.94806	3.53188	0.2460451	0.19973633	2.8984424	17	4 10.1	16.0
1058 Grubba	11.98	X	88.90784	94.52262	221.74385	3.69306	0.1874904	0.30276868	2.1964876	17	12 27.0	15.1
1059 Mussorgskia	10.9	X	170.73128	88.07801	200.37454	10.09730	0.1880740	0.22964586	2.6409710	17	—	—
1060 Magnolia	12.6	X	192.33588	84.76585	221.13460	5.91905	0.2024257	0.29451894	2.2373155	17	—	—
1061 Paeonia	12.09	X	213.96015	306.13539	90.92820	2.49866	0.2151202	0.17827429	3.1266330	17	5 6.5	17.5
1062 Ljuba	9.85	X	180.91489	101.45276	341.40301	5.59599	0.0696884	0.18920881	3.0049815	17	5 27.6	14.4
1063 Aquilegia	11.38	X	243.41217	107.54307	95.32697	5.97296	0.0396382	0.27998719	2.3140741	17	—	—
1064 Aethusa	10.6	X	165.58920	20.51508	280.57190	9.50197	0.1727553	0.24313088	2.5423927	17	—	—
1065 Amundsenia	12.1	X	38.69925	353.67934	330.33827	8.36067	0.2967694	0.27167131	2.3610591	17	11 16.8	14.7
1066 Lobelia	12.2	X	146.52664	16.90940	345.14966	4.82368	0.2094091	0.26474985	2.4020326	17	1 10.9	15.3
1067 Lunaria	10.99	X	222.90031	115.03179	289.58956	10.54740	0.1915623	0.20264431	2.8706469	17	5 18.8	15.9
1068 Nofretete	10.7	X	250.26089	267.46914	318.69218	5.48404	0.0962132	0.19884092	2.9071372	17	—	—
1069 Planckia	9.4	X	76.39384	31.79434	142.38411	13.56251	0.1105325	0.17828417	3.1265175	17	5 28.6	13.8
1070 Tunica	10.7	X	259.51243	189.81053	165.32044	16.96285	0.0791617	0.16960451	3.3222960	17	5 11.5	15.7
1071 Brita	10.4	X	60.27553	27.13676	52.57049	5.37154	0.1090834	0.21025608	2.8009391	17	—	—
1072 Malva	10.8	X	355.23283	25.99607	37.07652	8.02346	0.2413913	0.17503885	3.1650439	17	12 17.0	13.9
1073 Gellivara	11.7	X	248.00791	289.05202	39.57915	1.60437	0.1897898	0.17318905	3.1875409	17	3 16.9	17.0
1074 Beljawska	10.2	X	231.34828	22.86960	38.12361	0.80050	0.1790994	0.17630501	3.1498723	17	6 19.6	15.3
1075 Helina	10.15	X	156.59012	250.61014	100.81089	11.52276	0.1132845	0.18858106	3.0116466	17	1 16.2	14.7
1076 Viola	12.30	X	70.60791	304.08146	143.70606	3.31951	0.1446523	0.25322641	2.4743629	17	—	—
1077 Campanula	12.3	X	218.35884	13.59094	346.19578	5.39408	0.1970675	0.26612249	2.3937658	17	3 14.8	16.3
1078 Mentha	11.80	X	142.04459	43.56757	93.85051	7.37163	0.1382990	0.28830567	2.2693454	17	6 22.0	14.8
1079 Mimosa	11.1	X	253.25260	106.34851	329.36773	1.17642	0.0486464	0.20240295	2.8729285	17	8 12.1	15.2
1080 Orchis	12.20	X	278.53590	57.02831	2.04377	4.58732	0.2589619	0.26199773	2.4188245	17	7 21.8	15.7
1081 Reseda	11.0	X	167.24586	7.52042	30.44356	4.20295	0.1460048	0.18026252	3.1036001	17	3 27.6	16.0
1082 Pirola	10.41	X	130.73773	187.22887	148.00938	1.85240	0.1811303	0.17879656	3.1205414	17	—	—
1083 Salvia	12.1	X	91.45007	32.66483	80.81232	5.13114	0.1827248	0.27725977	2.3292252	17	3 17.8	14.3
1084 Tamariwa	10.78	X	122.38678	109.87798	186.88081	3.89526	0.1323362	0.22358643	2.6884735	17	12 22.8	15.1
1085 Amaryllis	9.7	X	40.30876	127.53204	139.98481	6.63959	0.0420180	0.17344550	3.1843981	17	7 26.4	13.9
1086 Nata	9.5	X	236.41035	158.77967	313.24232	8.35872	0.0544168	0.17522525	3.1627990	17	9 4.0	14.1
1087 Arabis	9.73	X	12.95867	25.79267	30.42501	10.06089	0.0942933	0.18834026	3.0142130	17	12 30.1	13.7
1088 Mitaka	11.39	X	200.92467	319.49605	54.49530	7.65140	0.1953879	0.30152963	2.2025007	17	3 16.4	14.9
1089 Tama	11.7	X	82.84273	354.29064	71.48900	3.72643	0.1270107	0.29920613	2.2138884	17	—	—
1090 Sumida	12.49	X	271.54530	337.68381	148.04424	21.50543	0.2194998	0.27182572	2.3601649	17	10 24.2	15.9
1091 Spiraea	10.8	X	110.36803	12.06336	80.78906	1.15538	0.0642740	0.15528587	3.4280574	17	3 26.8	15.7
1092 Lilium	10.82	X	200.61905	316.51299	307.48995	5.38853	0.0843418	0.19959598	2.8998009	17	—	—
1093 Freda	8.83	X	175.71612	251.42137	55.63455	25.21494	0.2711167	0.17805034	3.1292542	17	—	—
1094 Siberia	11.6	X	221.13195	310.28692	149.13947	14.02764	0.1335358	0.24281674	2.5445850	17	7 26.2	15.5
1095 Tulipa	10.42	X	181.75547	342.69088	178.53861	10.02959	0.0220930	0.18733646	3.0249707	17	9 4.8	14.7
1096 Reunerta	10.7	X	65.06627	248.00126	81.34590	9.47133	0.1939210	0.23494703	2.6010941	17	12 11.6	14.3
1097 Vicia	12.0	X	274.04738	176.51361	133.85765	1.53318	0.2928851	0.22923314	2.6441400	17	3 1.8	16.5
1098 Hakone	10.4	X	13.74136	80.80503	329.00350	13.37750	0.1189427	0.22359735	2.6883859	17	—	—
1099 Figneria	10.2	X	260.48003	347.75963	22.24683	11.83907	0.2775477	0.17381525	3.1798805	17	5 5.3	15.7
1100 Arnica	10.9	X	47.14236	24.23985	304.11986	1.03417	0.0689005	0.19969850	2.8988084	17	10 25.9	14.6
1101 Clematis	10.6	X	151.10689	107.53659	201.98193	21.42421	0.0783734	0.16977244	3.2301641	17	—	—
1102 Pepita	9.40	X	267.79880	116.54733	216.58612	15.82778	0.1108156	0.18309470	3.0715119	17	4 13.3	14.1
1103 Sequoia	12.25	X	66.94343	77.90941	267.64727	17.89858	0.0947528	0.36654478	1.9336804	17	—	—
1104 Syringa	12.3	X	305.65510	277.49615	128.65684	6.44152	0.3437783	0.23114007	2.6295769	17	7 25.3	15.7
1105 Fragaria	10.09	X	72.77282	225.10486	116.90765	10.96680	0.1057909	0.18867216	3.0106770	17	12 19.3	14.4
1106 Cydonia	11.7	X	24.26922	230.32946	328.27626	13.06443	0.1267559	0.23553547	2.5967602	17	3 14.4	14.6
1107 Lictoria	9.5	X	277.72770	351.37600	110.84766	7.07341	0.1245020	0.17342977	3.1845907	17	10 7.8	14.0
1108 Demeter	11.91	X	87.44195	78.13216	234.25326	24.91543	0.2567137	0.26054468	2.4278093	17	12 20.0	16.0
1109 Tata	10.06	X	63.02848	359.28829	268.09276	4.11994	0.0984625	0.17011446	3.2258331	17	9 1.4	14.5
1110 Jaroslawa	11.5	X	346.10033	78.59087	241.74736	5.85579	0.2409090	0.29831095	2.2183152	17	6 9.2	12.9
1111 Reinmuthia	10.67	X	329.11745	236.17393	132.44076	3.89167	0.1008313	0.19035463	2.9929106	17	8 21.6	14.4
1112 Polonia	10.05	X	289.05642	87.42790	302.86453	8.99193	0.1068883	0.18791092	3.0188025	17	7 21.8	14.2
1113 Katja	9.3	X	341.94970	119.15317	324.54027	13.28047	0.1422295	0.17960651	3.1111528	17	12 16.7	13.1
1114 Lorraine	10.0	X	138.45371	203.80035	195.51706	10.74381	0.0718607	0.18095815	3.0956412	17	2 15.8	14.7
1115 Sabauda	9.7	X	58.44916	57.29190	71.67850	15.27056	0.1704563	0.18021534	3.1041418	17	3 14.7	13.6
1116 Catriona	9.8	X	348.27311	82.66561	356.51973	16.52285	0.2295961	0.19718657	2.9233748	17	12 31.7	13.0
1117 Reginita	11.7	X	245.70981	151.05267	147.13495	4.34460	0.1983696	0.29251260	2.2475343	17	1 16.9	15.5
1118 Hanskya	9.8	X	306.45166	335.05397	318.75689	13.95158	0.0446077	0.17115689	3.2127219	17	4 15.1	14.6
1119 Euboea	11.3	X	190.40055	230.15812	57.38100	7.85834	0.1558347	0.23369287	2.610392			

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1121 Natascha	11.5 ^m	X	285.31426 ^o	50.37944 ^o	357.90982	6.16459 ^o	0.1585020	0.24255552 ^o	2.5464116	17	7 31.9	14.9
1122 Neith	11.7	X	30.68043	328.95807	63.38512	4.73814	0.2574553	0.23434741	2.6055292	17	—	—
1123 Shapleya	11.6	X	267.07613	317.61784	79.88834	6.42168	0.1570706	0.29703229	2.2246769	17	6 17.9	14.4
1124 Stroobantia	10.67	X	348.81790	264.93468	22.24616	7.79333	0.0300956	0.19689868	2.9262236	17	6 6.5	14.6
1125 China	11.6	X	215.00518	10.74526	97.17132	3.04076	0.2179686	0.17826440	3.1267487	17	7 30.6	16.9
1126 Otero	11.8	X	291.08739	136.07867	1.08923	6.50449	0.1464938	0.28774214	2.2723073	17	12 18.2	14.0
1127 Mimi	10.95	X	122.25510	281.94518	128.62593	14.74466	0.2641627	0.23560492	2.5962498	17	3 2.2	14.5
1128 Astrid	10.9	X	248.28255	234.36724	59.41896	1.01446	0.0465348	0.21178800	2.7874162	17	2 4.4	15.0
1129 Neujmina	10.20	X	204.95123	139.74223	269.22111	8.61745	0.0823807	0.18757664	3.0223880	17	5 11.3	14.9
1130 Skuld	12.0	X	173.34914	113.81021	216.13476	2.16768	0.1982929	0.29632061	2.2282375	17	—	—
1131 Porzia	12.9	X	165.22333	248.00987	100.71208	3.22925	0.2866726	0.29636224	2.2280288	17	1 15.6	16.1
1132 Hollandia	11.1	X	20.36948	270.52783	29.62376	7.22173	0.2743777	0.22376664	2.6870298	17	8 30.7	13.1
1133 Lugduna	12.22	X	67.19660	306.73828	58.22952	5.37651	0.1879151	0.30498865	2.1858160	17	—	—
1134 Kepler	14.1	X	5.23601	332.89248	5.79839	15.31250	0.4690581	0.22489237	2.6780554	17	10 9.8	14.2
1135 Colchis	10.5	X	87.84940	3.66723	350.73365	4.54092	0.1160482	0.22653337	2.6651066	17	—	—
1136 Mercedes	11.2	X	171.67704	148.49409	209.52837	8.98254	0.2551898	0.23979536	2.5659146	17	2 6.8	15.5
1137 Raissa	10.6	X	132.76473	277.00272	78.45504	4.31619	0.0977024	0.26127841	2.4232620	17	—	—
1138 Attica	11.4	X	285.18142	106.93309	283.49980	13.97036	0.0747275	0.17666050	3.1456452	17	7 20.6	15.8
1139 Atami	12.51	X	110.80363	206.61855	213.34745	13.08694	0.2553028	0.36256136	1.9478180	17	—	—
1140 Crimea	10.28	X	64.25846	310.15764	72.13909	14.13565	0.1130799	0.21364467	2.7712434	17	—	—
1141 Bohmia	13.4	X	284.92053	276.18481	105.52322	4.27532	0.1654205	0.28815346	2.2701444	17	6 17.3	16.1
1142 Aetolia	10.2	X	90.20911	96.49216	139.34229	2.10959	0.0809871	0.17344640	3.1843871	17	8 27.5	14.6
1143 Odysseus	7.93	X	167.26636	236.73501	221.28892	3.13759	0.0892718	0.08194180	5.2496747	17	6 12.7	15.2
1144 Oda	9.9	X	131.27864	220.86730	156.73086	9.74227	0.0941587	0.13578622	3.7488574	17	1 28.6	15.3
1145 Robelmonte	11.3	X	68.01231	267.51395	346.82334	6.20715	0.1186062	0.26119726	2.4237639	17	8 27.4	13.9
1146 Biarmia	9.80	X	184.40100	63.80084	213.89215	17.06722	0.2551031	0.18553639	3.0445047	17	—	—
1147 Stavropolis	11.5	X	271.24584	15.74175	265.21926	3.88059	0.2320305	0.28803126	2.2707865	17	1 16.8	15.4
1148 Rarahu	10.15	X	278.28257	174.80165	145.42561	10.82712	0.1087759	0.18786376	3.0193077	17	4 13.3	14.7
1149 Volga	10.57	X	258.64254	116.40381	261.43912	11.74977	0.0949760	0.19977327	2.8980851	17	5 29.5	14.8
1150 Achaia	12.6	X	48.79646	139.57362	206.54151	2.39292	0.2047562	0.30390924	2.1909886	17	12 23.8	15.0
1151 Ithaka	13.2	X	212.70664	122.36439	225.42500	6.56158	0.2763456	0.26396434	2.4067956	17	2 23.5	17.6
1152 Pawona	11.1	X	356.07371	218.56073	331.90802	5.07975	0.0418587	0.26063869	2.4272255	17	1 25.1	14.1
1153 Wallenbergia	12.1	X	237.52409	28.76500	280.54336	3.33452	0.1607678	0.30290117	2.1958470	17	1 21.1	15.4
1154 Astronomia	10.51	X	22.46090	203.84998	82.51111	4.53235	0.0707407	0.15784143	3.3909551	17	7 29.5	14.9
1155 Aëna	12.0	X	351.12598	195.38242	39.12130	6.59355	0.1645921	0.25480411	2.4641384	17	3 4.8	14.8
1156 Kira	12.3	X	326.66515	353.75643	91.13036	1.39760	0.0466039	0.29454898	2.2371634	17	12 12.6	14.7
1157 Arabia	10.0	X	195.97554	313.36810	336.18833	9.54479	0.1444472	0.17367104	3.1816405	17	—	—
1158 Luda	10.8	X	104.05266	56.25429	344.73583	14.83378	0.1128230	0.24009000	2.5638149	17	—	—
1159 Granada	11.55	X	35.17560	313.33492	347.88905	13.03075	0.0583000	0.26849389	2.3796501	17	9 3.9	14.3
1160 Illyria	11.5	X	166.35922	4.69938	3.79197	14.96352	0.1178635	0.24049069	2.5609663	17	2 10.1	15.4
1161 Thessalia	11.1	X	213.02115	309.20506	72.56669	9.39137	0.0868664	0.17436624	3.1731781	17	4 22.8	16.0
1162 Larissa	9.44	X	315.26882	209.54986	39.80824	1.88565	0.1094516	0.12605750	3.9393412	17	3 11.6	14.8
1163 Saga	10.7	X	237.48222	197.43800	127.72465	9.01455	0.0450580	0.17041879	3.2219916	17	3 13.6	15.5
1164 Kobolda	12.8	X	15.68381	341.24659	156.96017	25.18998	0.1958216	0.28147867	2.3058925	17	—	—
1165 Imprinetta	10.7	X	221.91928	96.95860	203.79092	12.81168	0.2129030	0.17849927	3.1240053	17	1 19.2	16.3
1166 Sakuntala	10.3	X	177.35663	189.91917	106.68906	18.92360	0.2092242	0.24423566	2.5347200	17	—	—
1167 Dubiago	9.85	X	314.08711	71.34357	223.38932	5.74768	0.0694795	0.15621343	3.4144740	17	5 2.3	14.5
1168 Brandia	12.53	X	120.51648	122.90843	218.65487	12.73459	0.2186752	0.24190660	2.5509634	17	—	—
1169 Alwine	12.8	X	155.85178	177.28839	255.07589	4.05224	0.1547373	0.27915326	2.3186805	17	4 10.8	16.0
1170 Siva	12.43	X	150.18535	59.44224	0.90704	22.17310	0.3002680	0.27771389	2.3266853	17	4 2.3	16.1
1171 Rùsthawelia	9.90	X	141.79031	289.77124	122.05064	3.07164	0.1906887	0.17322627	3.1870842	17	3 25.2	14.9
1172 Aneās	8.33	X	221.76888	50.91332	247.32625	16.66409	0.1036918	0.08268964	5.2179750	17	2 1.4	15.9
1173 Anchises	8.89	X	168.17030	40.57726	283.90813	6.91922	0.1371634	0.08085146	5.2967663	17	1 20.7	16.4
1174 Marmara	11.4	X	227.46722	351.99008	1.01338	10.07377	0.1098292	0.18704292	3.0281348	17	3 27.3	16.2
1175 Margo	10.0	X	61.25670	102.78842	237.18689	16.30730	0.0678705	0.17087723	3.2162262	17	11 25.4	14.4
1176 Lucidor	11.5	X	224.91221	156.29257	272.23794	6.64651	0.1433192	0.22325457	2.6911370	17	6 21.6	15.7
1177 Gonnessia	9.3	X	344.45575	241.85029	252.15985	15.07121	0.0310454	0.16089031	3.3479794	17	—	—
1178 Irmela	11.81	X	254.74139	357.23999	170.10586	6.95073	0.1824126	0.22455248	2.6807572	17	11 23.0	15.6
1179 Mally	12.8	X	104.44247	234.15014	6.81155	8.70669	0.1715059	0.23254156	2.6190010	17	10 1.8	16.7
1180 Rita	9.14	X	234.06043	209.01571	88.32940	7.19809	0.1574388	0.12385373	3.9859329	17	2 8.9	15.4
1181 Lilith	11.2	X	352.68037	156.11975	260.69951	5.60282	0.1966435	0.22677894	2.6631823	17	12 11.6	13.7
1182 Ilona	11.5	X	328.00576	63.03491	336.37552	9.38809	0.1179694	0.29017579	2.2595846	17	9 28.8	13.6
1183 Jutta	12.4	X	243.60301	205.59272	15.13890	2.80112	0.1301285	0.26787893	2.3832907	17	—	—
1184 Gaea	11.1	X	0.08359	311.33888	355.74643	11.31494	0.0702991	0.22617080	2.6679542	17	7 20.6	14.5
1185 Nikko	12.09	X	280.92506	1.96163	71.90400	5.70129	0.1058849	0.29448960	2.2374641	17	9 9.5	14.7
1186 Turnera	9.20	X	252.20052	294.99659	42.98837	10.75157	0.1012273	0.18731430	3.0252093	17	4 7.1	13.8
1187 Afra	11.4	X	182.57315	74.62388	327.27673	10.69378	0.2215450	0.22943290	2.6426050	17	4 6.5	16.1
1188 Gothlandia	11.6	X	294.72325	7.16597	5.45049	4.81688	0.1805358	0.30406990	2.1902167	17	6 12.4	14.3
1189 Terentia	9.9	X	103.64669	95.57083	275.24309	9.86708	0.1154934	0.19654091	2.9297736	17	—	—
1190 Pelagia	12.7	X	284.94662	41.19866	26.47703	3.16972	0.1323157	0.25999011	2.4312605	17	8 30.9	15.6
1191 Alfaterna	10.8	X	178.01515	53.41081	134.72505	18.49089	0.0470022	0.20033323	2.8926821	17	10 11.9	15.3
1192 Prisma	12.92	X	297.62144	131.43857	1.35165	23.90186	0.2578065	0.27079561	2.3661465	17	11 23.0	15.7
1193 Africa	11.8	X	9.01132	183.92480	49.53770	14.14086	0.1233857	0.22895453	2.6462847	17	4 17.1	14.7
1194 Aletta	10.6	X	178.30164	243.25432	291.31201	10.86846	0.0918214	0.19816543	2.9137400	17	9 12.8	15.3
1195 Orangia	13.2	X	150.46341	328.26933	281.25879	7.19066	0.2006890	0.29050152	2.2578952	17	11 28.0	16.9
1196 Sheba	10.26	X	243.82630	262.41369	100.77485	17.65974	0.1789785	0.22791076	2.6543580	17	4 24.6	14.9
1197 Rhodesia	10.2	X	282.93891	277.12299	255.73598	12.98427	0.2303920	0.20094107	2.8868457	17	12 24.6	13.7
1198 Atlantis	14.4	X	168.18166	84.52756	259.58519	2.72334	0.3360438	0.29196840	2.2503262	17	1 18.2	17.7
1199 Geldonia	10.36	X	324.45090	291.32858	235.62934	8.79166	0.0278191	0.18801564	3.0176815	17	—	—
1200 Imperatrix	10.8	X	114.85418	51.58288	204.77153	4.59352	0.1049981	0.18364				

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1201 Strenua	11.4 ^m	X	138.72082	163.63285	203.14595	7.00676	0.0404775	0.22243419	2.6977499	17	—	—
1202 Marina	10.0	X	346.15575	307.45070	49.88014	3.33386	0.1661152	0.12329294	3.9980102	17	9 1.1	14.8
1203 Nanna	11.6	X	176.89510	176.66045	224.52982	5.98704	0.2473830	0.20045903	2.8914719	17	4 9.6	16.6
1204 Renzia	11.9	X	110.17927	313.74909	7.57643	1.87964	0.2937314	0.28948729	2.2631658	17	—	—
1205 Ebella	13.5	X	103.86571	349.24473	23.08352	8.86166	0.2736941	0.24420801	2.5349114	17	—	—
1206 Numerowia	11.5	X	38.11466	277.42437	324.44332	13.00321	0.0533417	0.20323001	2.8651289	17	6 18.4	15.4
1207 Ostenia	10.8	X	125.71453	44.47134	20.13118	10.36049	0.0850975	0.18728241	3.0255527	17	3 10.2	15.1
1208 Troilus	8.99	X	172.55485	296.25186	48.54667	33.54178	0.0914662	0.08192766	5.2502784	17	3 3.7	16.7
1209 Pumma	10.7	X	302.92969	176.86963	89.80590	6.93334	0.1299982	0.17452023	3.1713112	17	3 6.5	15.3
1210 Morosovia	9.91	X	162.95293	169.11204	106.62094	11.27069	0.0603584	0.18867722	3.0106232	17	—	—
1211 Bressole	11.0	X	107.92358	211.95682	129.76071	12.76253	0.1609920	0.19677198	2.9274797	17	—	—
1212 Francette	9.54	X	282.89492	348.23356	149.57726	7.58977	0.1914121	0.12535445	3.9540565	17	11 11.9	15.1
1213 Algeria	11.1	X	203.03433	109.13283	271.37187	13.07996	0.1269085	0.17698066	3.1418505	17	4 1.8	16.4
1214 Richilde	11.1	X	207.11022	32.57948	285.92500	9.83449	0.1187897	0.22092814	2.7099962	17	1 19.5	15.2
1215 Boyer	11.0	X	324.91022	266.01840	123.73536	15.91525	0.1330605	0.23807372	2.5782701	17	9 14.0	14.0
1216 Askania	13.49	X	134.37822	144.63645	121.59921	7.59972	0.1790896	0.29544135	2.2326563	17	12 6.6	17.0
1217 Maximiliana	12.6	X	196.35826	91.46384	148.42971	5.15336	0.1541890	0.27308353	2.3529122	17	12 27.9	16.1
1218 Aster	13.2	X	56.71380	69.37264	63.81953	3.15725	0.1093903	0.28944862	2.2633674	17	1 24.1	15.2
1219 Britta	11.8	X	71.40699	23.56279	42.54088	4.41374	0.1241774	0.29940933	2.2128866	17	—	—
1220 Crocus	11.72	0.23	204.15847	333.40976	113.34273	11.36489	0.0738697	0.18944314	3.0025031	17	6 28.5	16.2
1221 Amor	17.7	X	27.88556	26.65236	171.34409	11.87940	0.4355971	0.37073309	1.9190891	17	—	—
1222 Tina	11.2	X	73.25918	59.91716	245.79281	19.58803	0.2493049	0.21092912	2.7949777	17	11 26.2	15.2
1223 Neckar	10.58	X	194.63253	15.33263	40.81656	2.54501	0.0592573	0.20277083	2.8694527	17	5 8.3	14.6
1224 Fantasia	11.36	X	238.84126	129.50190	258.08122	7.88824	0.1987879	0.28180885	2.3040910	17	5 3.4	15.2
1225 Ariane	12.1	X	150.36098	100.65835	12.38102	3.07397	0.0748962	0.29538437	2.2329434	17	5 19.2	14.8
1226 Golia	12.2	X	57.38516	139.78344	17.48545	9.84705	0.1124366	0.23739547	2.5831785	17	3 22.1	14.9
1227 Geranium	10.8	X	23.69676	302.83976	0.70163	16.49167	0.1916962	0.17067184	3.2188060	17	9 4.5	14.4
1228 Scabiosa	11.4	X	84.79314	209.71670	307.92863	3.27996	0.0421155	0.21396700	2.7684596	17	4 28.3	15.0
1229 Tilia	11.3	X	283.97070	166.53232	197.36919	1.03921	0.1651600	0.17023255	3.2243411	17	6 4.6	16.1
1230 Riceia	13.0	X	288.80494	185.24877	200.55243	10.51458	0.1794555	0.23895575	2.5719216	17	6 29.3	16.7
1231 Auricula	12.2	X	35.77771	245.39967	342.40936	11.48523	0.0864686	0.22615812	2.6680538	17	5 19.2	15.5
1232 Cortusa	10.3	X	175.46122	340.21620	261.21266	10.35899	0.1343889	0.17346905	3.1841100	17	12 1.9	15.5
1233 Kobresia	11.5	X	117.22316	335.02074	291.42714	5.60241	0.0554203	0.24119743	2.5559612	17	11 3.7	15.1
1234 Elyna	10.9	X	148.48075	87.42374	304.67782	8.51201	0.0872510	0.18820075	3.0157024	17	2 19.4	15.3
1235 Schorria	12.68	X	169.77909	43.78093	12.96000	25.00113	0.1545145	0.37325129	1.9104478	17	3 25.2	14.8
1236 Thais	11.93	X	268.21198	306.09567	48.61017	13.17493	0.2413320	0.26001571	2.4311009	17	4 21.6	15.9
1237 Geneviève	10.8	X	169.28433	305.88295	57.86746	9.73492	0.0772365	0.23341400	2.6124708	17	2 1.8	14.6
1238 Predappia	12.1	X	225.94188	91.91309	51.94351	12.15463	0.1410868	0.22632767	2.6667212	17	10 2.5	16.3
1239 Queteleta	12.4	X	271.62028	35.47574	73.15952	1.66190	0.2338245	0.22714378	2.6603299	17	9 21.5	16.1
1240 Centenaria	10.1	X	1.42045	24.17843	323.73138	10.16749	0.1746497	0.20300634	2.8672330	17	9 12.9	13.2
1241 Dysona	9.45	X	290.13283	320.06689	322.26982	23.51794	0.1023903	0.17299559	3.1899169	17	3 3.7	14.3
1242 Zambesia	10.4	X	139.41877	52.96807	350.01421	10.16255	0.1893007	0.21748685	2.7385082	17	3 3.8	14.4
1243 Pamela	9.7	X	165.56469	56.58620	245.67626	13.28613	0.0467846	0.18092451	3.0960249	17	—	—
1244 Deira	11.5	X	335.23442	261.44561	277.11766	8.69499	0.0982126	0.27482350	2.3429704	17	—	—
1245 Calvinia	9.9	X	16.89592	208.51602	151.72867	2.89324	0.0821553	0.20030872	2.8929181	17	10 26.9	13.4
1246 Chaka	10.8	X	349.46007	54.88285	290.52763	16.00061	0.3100339	0.23240191	2.6200500	17	7 30.2	12.5
1247 Memoria	10.52	X	130.44539	139.43448	161.72608	1.77796	0.1746596	0.17780678	3.1321112	17	—	—
1248 Jugurtha	9.8	X	259.89435	347.25387	79.38640	9.13830	0.1615500	0.21954056	2.7214030	17	8 15.9	13.6
1249 Rutherfordia	11.54	X	150.14024	223.37373	259.00388	4.87562	0.0767303	0.29716663	2.2240063	17	6 2.2	14.3
1250 Galanthus	12.26	X	249.60213	217.16622	292.01594	15.16913	0.2724975	0.24186513	2.5512551	17	10 5.8	16.6
1251 Hedera	10.50	X	55.86221	217.51928	140.64873	6.04886	0.1576899	0.22009560	2.7168259	17	12 29.5	14.2
1252 Celestia	10.89	X	3.36469	63.62177	140.92362	33.83834	0.2079039	0.22278927	2.6948827	17	2 11.9	13.7
1253 Frisia	12.0	X	78.22711	355.23427	40.01484	1.34677	0.2109765	0.17526223	3.1623540	17	—	—
1254 Erfordia	10.5	X	182.76394	240.26483	287.99966	7.07039	0.0318574	0.17751006	3.1356006	17	9 12.1	15.2
1255 Schilowa	10.3	X	16.63665	133.68845	237.62300	8.54663	0.1733416	0.17669042	3.1452902	17	11 14.8	13.8
1256 Normannia	9.66	X	5.53625	101.06054	236.94122	4.17319	0.0782092	0.12821984	3.8949261	17	9 5.8	14.7
1257 Móra	12.1	X	335.02915	18.98288	213.93901	3.92311	0.0833048	0.25101942	2.4888449	17	2 15.7	15.4
1258 Sicilia	10.7	X	304.82106	77.86045	299.61486	7.70218	0.0429179	0.17339125	3.1850623	17	8 4.4	15.2
1259 Ogyalla	10.5	X	94.45963	149.89045	75.00020	2.38104	0.1278711	0.18029674	3.1032074	17	8 26.3	14.8
1260 Wáhhalla	12.4	X	169.75601	19.64702	304.61350	8.01148	0.0392238	0.23333216	2.6130816	17	—	—
1261 Legia	11.2	X	57.53012	104.64394	67.28110	2.42745	0.1790415	0.17734862	3.1375032	17	5 2.6	14.8
1262 Sniadeckia	10.25	X	346.50236	146.87290	124.28666	13.13054	0.0049382	0.18950388	3.0018615	17	5 21.7	14.6
1263 Varsavia	10.2	X	213.72940	287.46274	158.47928	29.27287	0.1887026	0.22661284	2.6644836	17	7 2.8	15.2
1264 Letaba	9.6	X	112.30443	31.52883	235.04990	24.95332	0.1549214	0.20306807	2.8666518	17	11 6.8	14.1
1265 Schweikarda	11.1	X	8.63439	111.07021	314.31561	9.50994	0.0750896	0.18732714	3.0250710	17	—	—
1266 Tone	9.41	X	102.81920	298.20246	320.62664	17.18235	0.0509928	0.16003028	3.3599639	17	9 26.9	14.5
1267 Geertruida	12.1	X	136.63408	268.19287	24.38956	4.78256	0.1793584	0.25408024	2.4688164	17	—	—
1268 Libya	9.12	X	157.53621	119.43384	351.00131	4.42722	0.1019335	0.12442677	3.9736856	17	6 14.4	15.2
1269 Rollandia	8.82	X	276.47937	19.21268	134.71344	2.75794	0.1002073	0.12770248	3.9054388	17	12 3.3	14.1
1270 Datura	12.5	X	63.29776	259.02058	97.80071	5.98567	0.2086297	0.29507913	2.2344830	17	—	—
1271 Isergina	10.3	X	160.82193	269.37210	127.22170	6.66871	0.1194818	0.17656214	3.1468134	17	3 19.8	15.1
1272 Gefion	12.9	X	215.36416	3.66700	321.56055	8.41857	0.1521485	0.21217810	2.7839986	17	2 7.6	17.3
1273 Helma	12.9	X	339.01397	49.12423	296.50139	5.40328	0.1614556	0.26615087	2.3935957	17	7 24.8	15.1
1274 Delportia	11.82	X	33.18009	244.65489	327.09195	4.39699	0.1130733	0.29612055	2.2929410	17	4 5.3	13.8
1275 Cimbria	10.72	X	143.94571	196.97812	188.56252	12.87673	0.1681187	0.22455445	2.6807415	17	2 7.4	14.7
1276 Uccia	10.9	X	25.84781	333.68102	114.46045	23.27542	0.0940892	0.17404943	3.1770275	17	—	—
1277 Dolores	11.05	X	315.34102	46.99180	247.04138	6.96745	0.2373452	0.22205874	2.7007899	17	3 24.1	15.0
1278 Kenya	10.9	X	166.85902	238.59251	90.30866	10.85373	0.2636268	0.26444246	2.4040040	17	—	—
1279 Uganda	12.51	X	22.95363	297.61037	335.43155	5.72393	0.2107440	0.27023323	2.3694282	17	7 6.6	14.0
1280 Baillauda	10.33	X	61.72917	98.98600	293.06080	6.45980	0.0499632	0.15627				

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1281 Jeanne	11.6 ^m	X	232.48516 ^o	72.77527 ^o	210.10768	7.44727 ^o	0.2086588	0.24125638	2.5555449	17	—	—
1282 Utopia	10.2	X	23.82507	79.26457	324.31420	18.04029	0.1244208	0.17909263	3.1171012	17	—	—
1283 Komsomolia	10.4	X	344.98159	235.04541	157.73569	8.90778	0.2211235	0.17353415	3.1833136	17	10 15.8	13.6
1284 Latvia	10.24	X	124.41954	114.62208	302.92016	10.86969	0.1702820	0.22882765	2.6472627	17	2 23.2	13.9
1285 Julietta	10.8	X	39.52999	71.03657	317.89591	5.69248	0.0533330	0.19040449	2.9923881	17	12 28.0	14.9
1286 Banachiewiczza	10.88	X	29.65272	107.57981	200.46484	9.74864	0.0888434	0.18742975	3.0239669	17	9 3.8	14.9
1287 Lorcja	11.07	X	274.29011	267.81387	202.52509	9.82070	0.0632465	0.18856063	3.0118641	17	10 19.7	15.2
1288 Santa	11.41	X	40.74164	55.26941	198.96463	7.57137	0.0655381	0.20113519	2.8849880	17	11 17.4	15.3
1289 Kuttaissi	10.73	X	154.49842	117.26960	293.19235	1.61656	0.0635793	0.20386695	2.8591580	17	—	—
1290 Albertine	12.7	X	355.83922	78.97813	307.38061	5.58501	0.1545346	0.27075575	2.3663788	17	11 4.1	14.7
1291 Phryne	10.3	X	29.19833	118.83116	215.37716	9.10606	0.0943328	0.18841391	3.0134275	17	10 9.5	14.1
1292 Luce	11.4	X	107.38245	242.56430	271.16897	2.15104	0.0592542	0.24327742	2.5413717	17	5 23.8	14.7
1293 Sonja	13.5	X	104.44714	99.83041	236.38136	5.36384	0.2754387	0.29652058	2.2272356	17	—	—
1294 Antwerpia	10.7	X	16.16551	313.22477	81.13286	8.72710	0.2342133	0.22384734	2.6863840	17	12 31.2	13.5
1295 Deflotte	10.7	X	131.90484	275.34216	185.07924	2.88578	0.1216904	0.15779858	3.3915691	17	5 6.5	15.8
1296 Andrée	11.7	X	74.11560	236.86441	226.98805	4.10723	0.1423979	0.26209166	2.4182466	17	1 23.8	14.0
1297 Quadea	10.9	X	30.78033	123.49110	295.93569	9.00274	0.0721751	0.18776652	3.0203500	17	—	—
1298 Nocturna	11.0	X	151.34227	58.71823	299.99175	5.48922	0.1496469	0.17838323	3.1253599	17	1 25.1	15.8
1299 Mertona	11.5	X	328.61346	260.43672	165.60499	7.87538	0.1895136	0.21018632	2.8015589	17	11 2.5	14.4
1300 Marcelle	11.4	X	93.07777	326.67030	82.94319	9.54820	0.0063157	0.21251290	2.7810738	17	—	—
1301 Yvonne	11.3	X	96.45622	302.26902	161.55624	34.02974	0.2693125	0.21402333	2.7679737	17	4 14.2	15.3
1302 Werra	10.9	X	251.94782	354.63558	90.14123	2.59580	0.1751286	0.17946267	3.1128150	17	8 8.3	15.6
1303 Luthera	9.5	X	197.99718	100.43121	72.04907	19.49087	0.1048211	0.16982291	3.2295241	17	10 14.7	14.8
1304 Arosa	9.2	X	207.15060	148.26415	86.57985	18.99102	0.1173451	0.17235405	3.1978277	17	12 23.9	14.0
1305 Pongola	10.65	X	89.26056	146.96505	62.95582	2.31740	0.0734864	0.18852238	3.0122714	17	7 22.7	14.8
1306 Scythia	9.71	X	142.13875	139.43556	274.24140	14.93502	0.0939620	0.17635840	3.1492365	17	3 7.6	14.7
1307 Cimmeria	12.25	X	215.79655	207.28755	233.86802	3.95081	0.0972864	0.29202047	2.2500587	17	6 25.1	15.4
1308 Halleria	10.9	X	173.29053	164.00245	354.14005	5.57661	0.1020321	0.19867135	2.9087912	17	8 23.5	15.0
1309 Hyperborea	10.4	X	292.37517	244.89727	206.08193	10.27933	0.1502562	0.17162214	3.2069130	17	10 4.6	14.6
1310 Villigera	11.45	X	76.68994	88.75898	357.31861	21.07057	0.3554798	0.26623190	2.3931100	17	2 6.5	13.0
1311 Knopfia	12.4	X	168.59178	241.96281	245.15264	2.83284	0.0443204	0.26077968	2.4263506	17	7 3.5	15.7
1312 Vassar	10.7	X	104.97682	261.32583	129.44956	21.90079	0.2155557	0.18113140	3.0936669	17	1 18.9	14.7
1313 Berna	11.6	X	105.62965	99.25925	298.34431	12.53257	0.2077778	0.22767639	2.6561793	17	1 12.2	14.5
1314 Paula	12.68	X	12.41825	143.81885	264.64076	5.23999	0.1749202	0.28340770	2.2954171	17	—	—
1315 Bronislawa	10.0	X	310.10691	21.89859	236.49513	7.07655	0.0774063	0.17134707	3.2103442	17	3 6.6	14.7
1316 Kasan	13.1	X	145.59884	148.37066	238.24819	23.92971	0.3163912	0.26289299	2.4133300	17	2 12.7	17.3
1317 Silvretta	9.91	X	140.47869	32.36043	6.70558	20.55151	0.2368327	0.17182078	3.2044409	17	3 16.0	15.1
1318 Nerina	12.3	X	289.86871	196.22559	358.32725	24.66359	0.2038509	0.28123594	2.3072191	17	—	—
1319 Disa	10.6	X	41.06930	316.24523	256.09974	2.80071	0.2066913	0.19106204	2.9855186	17	5 27.1	13.4
1320 Impala	10.8	X	31.02620	205.71993	71.90465	19.79943	0.2288298	0.19047554	2.9916440	17	8 21.7	14.4
1321 Majuba	10.28	X	132.29779	345.65598	317.71065	9.50886	0.1696379	0.19553896	2.9397733	17	—	—
1322 Copernicus	12.3	X	10.21100	29.37892	253.18871	23.35916	0.2342940	0.26144229	2.4222492	17	6 14.9	13.9
1323 Tugela	9.9	X	234.49706	136.09826	45.24058	18.78663	0.1484395	0.16974589	3.2305010	17	11 14.9	14.8
1324 Knysna	13.0	X	268.11097	330.11609	304.38119	4.51941	0.1637645	0.30519407	2.1848350	17	1 5.7	16.4
1325 Inanda	12.1	X	165.02348	336.79963	14.39340	7.42054	0.2254815	0.24335685	2.5408187	17	1 28.7	16.2
1326 Losaka	10.92	X	340.77722	278.71294	101.69662	15.98504	0.2252827	0.22639855	2.6661646	17	9 27.6	13.7
1327 Namaqua	12.1	X	324.29871	269.89509	57.77217	5.81957	0.1600294	0.21249885	2.7811964	17	6 6.9	15.3
1328 Devota	10.31	X	13.87406	174.62528	222.68807	5.76578	0.1346931	0.15016083	3.5056208	17	12 6.0	14.6
1329 Eliane	10.90	X	238.05103	164.91519	132.06545	14.46929	0.1734638	0.23287632	2.6164905	17	1 20.6	15.2
1330 Spiridonia	10.0	X	104.04882	4.48312	158.82080	15.95698	0.0754902	0.17463655	3.1699029	17	6 14.1	14.8
1331 Solvejg	10.14	X	145.81524	185.19378	121.33604	3.10057	0.1900500	0.18067493	3.0988754	17	—	—
1332 Marconia	10.5	X	325.58312	348.97778	13.64999	2.45701	0.1317136	0.18395019	3.0619815	17	8 4.7	14.3
1333 Cevenola	11.5	X	250.14029	336.04419	115.09468	14.63925	0.1345487	0.23077305	2.6323643	17	8 19.4	15.4
1334 Lundmarka	10.3	X	286.14085	129.65494	133.22626	11.45280	0.0949853	0.19809873	2.9143940	17	2 7.4	14.4
1335 Demoulina	12.8	X	255.63647	198.88963	172.61911	2.54722	0.1539511	0.29390188	2.2404460	17	5 1.8	16.0
1336 Zeelandia	10.66	X	117.20310	220.01465	97.41959	3.19726	0.0648073	0.20484160	2.8500814	17	—	—
1337 Gerarda	11.2	X	257.78372	201.86520	160.28578	17.97914	0.0984209	0.19841843	2.9112625	17	5 13.1	15.9
1338 Duponta	12.6	X	102.87779	110.63117	325.62795	4.81704	0.1119654	0.28925555	2.2643745	17	1 24.2	14.8
1339 Désagneauxa	10.7	X	260.47917	162.21274	290.99575	8.69033	0.0574233	0.18778515	3.0201503	17	9 7.2	15.1
1340 Yvette	11.1	X	123.54400	224.25840	345.68917	0.41612	0.1283905	0.17346358	3.1841769	17	9 7.9	15.9
1341 Edmée	10.58	X	298.49142	141.10589	107.53524	13.08433	0.0799494	0.21707546	2.7419670	17	2 2.3	14.5
1342 Brabantia	11.35	X	281.59344	229.55334	312.97896	20.92353	0.2032622	0.28463900	2.2887926	17	—	—
1343 Nicole	11.0	X	287.44307	234.21161	41.24988	6.03642	0.1142338	0.23932637	2.5692657	17	2 15.4	14.8
1344 Caubeta	12.7	X	170.88303	133.51683	60.05575	5.65852	0.1199542	0.29242541	2.2479810	17	10 9.8	15.9
1345 Potomac	9.73	X	317.09286	333.13739	137.43760	11.39877	0.1824481	0.12371879	3.9888308	17	11 29.2	14.8
1346 Gotha	11.25	X	8.37910	249.99408	166.12954	13.85059	0.1783908	0.23142719	2.6274016	17	—	—
1347 Patria	11.3	X	272.77432	201.69987	229.20528	11.86858	0.0686538	0.23906897	2.5711095	17	8 21.8	15.0
1348 Michel	11.1	X	89.76351	18.29858	87.56986	6.58175	0.1353554	0.21088632	2.7953559	17	3 16.7	14.6
1349 Bechuana	10.5	X	336.81068	305.29672	307.12258	10.04925	0.1568553	0.18832243	3.0144032	17	3 17.4	14.6
1350 Rosselia	10.78	X	65.35189	237.70425	139.54674	2.93925	0.0897148	0.20409816	2.8569984	17	—	—
1351 Uzbekistania	9.9	X	134.87146	63.10622	9.47855	9.65788	0.0646904	0.17197880	3.2024776	17	3 27.8	14.6
1352 Wawel	11.2	X	34.29057	211.91945	186.15969	3.75744	0.0667042	0.21289724	2.7777258	17	—	—
1353 Maartje	9.9	X	134.16202	98.47127	211.79195	9.20322	0.0959962	0.18874618	3.0098898	17	—	—
1354 Botha	11.0	X	255.57635	250.44893	28.71513	5.95808	0.2172286	0.17852598	3.1236937	17	1 24.7	16.3
1355 Magoeba	13.05	X	245.86326	340.39532	225.25294	22.82723	0.0446601	0.39057985	1.8535152	17	—	—
1356 Nyanza	10.2	X	307.98712	302.26652	69.62654	7.94612	0.0498277	0.18213035	3.0823445	17	8 3.2	14.5
1357 Khama	11.03	X	100.98825	283.88391	83.73645	13.98370	0.1582035	0.17362158	3.1822447	17	—	—
1358 Gaika	12.4	X	25.76623	287.19712	21.77312	2.17254	0.1653810	0.25282370	2.4769897	17	9 10.2	14.6
1359 Prieska	10.3	X	232.56284	343.11477	64.03248	11.10494	0.0682100	0.17902102	3.1179324	17	6 10.4	14.9
1360 Tarka	11.4	X	105.16868	287.99913	331.42421	22.82395	0.213					

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1361 Leuschneria	10.9 ^m	X	53.29643 ^o	173.32988 ^o	164.72673 ^o	21.59043 ^o	0.1292224	0.18213922 ^o	3.0822444	17	11 26.5	15.5
1362 Griqua	11.18	X	342.47782	261.82711	121.33954	24.22330	0.3715983	0.17084824	3.2165900	17	9 16.1	14.1
1363 Herberta	11.3	X	224.24856	108.89188	214.68481	1.10342	0.0682763	0.19920419	2.9036019	17	2 15.8	15.8
1364 Safara	10.7	X	8.75015	220.38477	63.98610	11.48808	0.0660669	0.18851379	3.0123629	17	7 2.7	14.6
1365 Henyey	11.9	X	238.79822	337.32186	258.55158	5.07584	0.1228512	0.29231361	2.2485542	17	—	—
1366 Piccolo	10.45	X	245.20973	282.69922	24.14678	9.47583	0.1411809	0.20224200	2.8744526	17	2 18.2	15.1
1367 Nongoma	12.0	X	72.82418	347.94075	270.82245	22.48377	0.1309661	0.27466416	2.3438765	17	8 27.6	15.4
1368 Numidia	10.92	X	146.04623	264.36413	18.12986	14.82290	0.0622211	0.24574565	2.5243263	17	12 30.4	14.9
1369 Ostanina	10.6	X	2.90575	127.76391	180.46589	14.36731	0.2102534	0.17897241	3.1184970	17	7 21.2	14.1
1370 Hella	13.5	X	130.52222	3.99539	306.04483	4.80390	0.1706041	0.29195869	2.2503761	17	—	—
1371 Resi	11.7	X	134.01103	103.23417	185.16103	16.42549	0.1180570	0.17187978	3.2037075	17	12 18.2	17.0
1372 Haremari	11.0	X	243.89169	88.48370	327.44547	16.44991	0.1483158	0.21426295	2.7659097	17	6 27.0	15.5
1373 Cincinnati	11.6	X	4.53273	99.23176	297.46661	38.92726	0.3143718	0.15565388	3.4226520	17	12 13.1	15.5
1374 Isora	13.2	X	103.41450	60.96860	302.55968	5.29449	0.2787110	0.29203389	2.2499898	17	—	—
1375 Alfrede	11.4	X	98.81980	32.53352	52.76958	5.82043	0.0699334	0.25730639	2.4481367	17	2 7.1	14.3
1376 Michelle	12.4	X	276.13215	156.04154	163.46031	3.55099	0.2151853	0.29625520	2.2285654	17	3 9.5	15.7
1377 Roberbauxa	12.9	X	296.48585	356.94479	223.21578	6.02500	0.0930781	0.29009919	2.2599823	17	—	—
1378 Leonce	12.2	X	38.69815	202.15154	43.56778	3.59127	0.1498019	0.26939574	2.3743363	17	6 23.0	14.2
1379 Lomonosowa	10.9	X	88.81397	31.35933	169.88080	15.60658	0.0915138	0.24582167	2.5238058	17	7 7.4	14.4
1380 Volodia	11.8	X	159.24140	247.36046	359.06509	10.40748	0.1021803	0.17601836	3.1532911	17	11 20.5	16.9
1381 Danubia	12.29	X	29.61607	29.21028	351.89111	4.69707	0.1820936	0.25112681	2.4881353	17	—	—
1382 Gerti	12.0	X	258.60733	246.96459	353.04213	1.56214	0.1316837	0.29804267	2.2196462	17	—	—
1383 Limburgia	12.0	X	117.94766	164.57267	194.08792	0.05262	0.1907004	0.18262642	3.0767601	17	—	—
1384 Knietje	11.6	X	288.14773	276.17119	152.86180	11.85757	0.1826679	0.22514596	2.6760442	17	8 28.1	14.9
1385 Gelria	10.8	X	290.17459	260.79384	114.94367	6.92156	0.1068833	0.21728020	2.7402443	17	7 1.5	14.5
1386 Storeria	13.4	X	203.16574	152.98810	161.50148	11.82630	0.2870568	0.27117036	2.3639661	17	1 9.7	17.6
1387 Kama	13.3	X	70.17653	125.96240	203.03110	5.53826	0.2087470	0.29037723	2.2585394	17	12 24.9	16.4
1388 Aphrodite	11.0	X	282.94301	256.48395	54.36016	11.19049	0.0902894	0.18761300	3.0219975	17	4 9.7	15.4
1389 Onnie	11.64	X	224.24186	297.21686	174.56889	2.04802	0.0161383	0.20318004	2.8655986	17	8 25.9	15.5
1390 Abastumani	9.40	X	321.85015	332.51239	28.91863	19.93172	0.0348153	0.15472109	3.4363946	17	8 19.4	14.5
1391 Carelia	12.07	X	345.46853	86.15550	103.35442	7.59368	0.1649124	0.24234268	2.5479023	17	—	—
1392 Pierre	11.72	X	244.34794	44.29021	358.24345	12.26346	0.2026409	0.23413057	2.6071377	17	5 30.7	16.2
1393 Sofala	12.0	X	146.77533	183.46049	56.70038	5.84762	0.1091144	0.25953707	2.4340890	17	11 10.2	15.6
1394 Algoa	11.6	X	94.68173	114.11551	178.82555	2.67456	0.0762888	0.25871869	2.4392193	17	11 17.5	14.8
1395 Aribeda	11.5	X	0.61520	110.04707	244.87408	8.64404	0.0613783	0.17197121	3.2025719	17	9 18.1	15.8
1396 Outeniqua	11.9	X	53.73339	266.49543	359.53146	4.49339	0.1648809	0.29246070	2.2478002	17	8 28.9	13.8
1397 Umtata	11.47	X	173.36671	206.53114	77.43695	3.51093	0.2551475	0.22456623	2.6806477	17	—	—
1398 Donnera	10.2	X	142.80550	71.61614	297.11344	11.82529	0.1048771	0.17561650	3.1580997	17	1 23.1	14.8
1399 Teneriffa	13.6	X	162.56634	223.74624	161.65747	6.50941	0.1655266	0.29862789	2.2167454	17	2 13.1	16.5
1400 Tirela	11.4	X	316.88421	111.65108	210.10035	15.63068	0.2321526	0.17835514	3.1256880	17	5 13.7	15.6
1401 Lavonne	12.25	X	261.62231	71.06041	277.50401	7.28910	0.1791951	0.29653683	2.2271542	17	3 31.6	15.8
1402 Eri	12.7	X	175.35749	12.02265	266.96971	14.29782	0.1554323	0.22419592	2.6835988	17	—	—
1403 Idelsonia	11.5	X	16.02159	192.49079	156.98647	10.17837	0.2942466	0.22005859	2.7171305	17	11 9.1	14.0
1404 Ajax	9.3	X	230.96204	59.76878	332.94363	18.00296	0.1133238	0.08071951	5.3025371	17	5 25.5	16.9
1405 Sibelius	12.5	X	312.33908	95.79484	312.08278	7.03014	0.1465989	0.29172183	2.2515941	17	9 8.6	14.7
1406 Komppa	11.4	X	63.47349	84.52457	333.23962	12.41974	0.0972122	0.22268904	2.6956913	17	—	—
1407 Lindelöf	10.9	X	231.44471	111.03235	268.39374	5.81382	0.2821842	0.21428607	2.7657107	17	4 21.0	15.9
1408 Trusanda	11.2	X	300.87231	187.70709	201.50615	8.35492	0.0941303	0.17987069	3.1081057	17	8 4.9	15.6
1409 Isko	11.1	X	250.80897	207.79448	177.55533	6.70902	0.0560707	0.22517495	2.6758145	17	6 1.6	14.9
1410 Margret	11.1	X	209.01089	233.32285	170.92304	10.35182	0.1050076	0.18778482	3.0201538	17	5 13.3	15.9
1411 Brauna	11.0	X	286.00486	94.64176	284.59582	8.03926	0.0566544	0.18943653	3.0025729	17	7 10.4	15.1
1412 Lagrula	12.3	X	205.44685	14.00823	66.11775	4.71814	0.1130253	0.29913110	2.2142586	17	6 10.9	15.4
1413 Roucarie	11.3	X	139.03325	300.29611	178.74719	10.23520	0.0652879	0.18781984	3.0197784	17	5 28.4	15.8
1414 Jérôme	13.0	X	110.05549	2.65214	143.75539	8.85611	0.1613464	0.21222447	2.7835930	17	6 7.7	17.0
1415 Malautra	12.19	X	53.70528	240.68379	329.20366	3.42470	0.0866051	0.29725413	2.2235699	17	5 13.6	14.3
1416 Renauxa	10.7	X	194.18246	66.10603	352.59821	10.03259	0.1065873	0.18800680	3.0177761	17	5 10.3	15.6
1417 Walinskia	11.0	X	199.17363	166.43821	96.01565	8.27296	0.0775159	0.19234090	2.9722702	17	—	—
1418 Fayeta	12.09	X	11.57841	324.35564	355.11652	7.19380	0.2029791	0.29365161	2.2417188	17	8 29.1	13.2
1419 Danzig	11.3	X	53.40459	232.66716	213.52814	5.72551	0.1463925	0.28392226	2.2926429	17	—	—
1420 Radcliffe	11.9	X	335.44517	74.12783	260.91185	3.48532	0.0759117	0.21630221	2.7484979	17	7 16.6	15.1
1421 Esperanto	10.4	X	327.78379	164.36854	42.61940	9.80989	0.0838152	0.18150815	3.0893845	17	1 28.2	14.8
1422 Strömgrenia	13.42	X	349.73136	171.11657	201.60989	2.68091	0.1679710	0.29256518	2.2472650	17	10 3.4	15.0
1423 Jose	10.8	X	251.29862	321.65747	58.46753	2.90730	0.0795147	0.20380414	2.8597455	17	5 25.3	15.0
1424 Sundmania	9.9	X	196.28872	301.53061	42.98774	9.17840	0.0605802	0.17299936	3.1898705	17	2 21.4	14.8
1425 Tuorla	11.4	X	40.21766	342.25064	185.98827	12.97460	0.1011121	0.23341545	2.6124600	17	3 4.1	14.4
1426 Riviera	10.9	X	111.74031	275.04675	335.03882	9.06328	0.1598333	0.23760754	2.5816413	17	10 16.0	14.9
1427 Ruvuma	11.2	X	165.69276	241.81235	78.44633	9.34651	0.2120641	0.21629902	2.7485249	17	—	—
1428 Mombasa	10.3	X	305.67513	252.61106	115.71876	17.30470	0.1404155	0.20927172	2.8097155	17	7 8.7	13.9
1429 Pemba	12.3	X	207.67013	297.81784	47.70011	7.74926	0.3346652	0.24124066	2.5556559	17	2 27.9	17.2
1430 Somalia	12.1	X	184.53226	351.42230	327.24863	3.28835	0.1986332	0.24075380	2.5591002	17	—	—
1431 Luanda	11.7	X	293.57221	224.18650	117.72545	13.98701	0.1828600	0.23242533	2.6198740	17	5 13.8	15.7
1432 Ethiopia	12.0	X	266.46158	218.44825	123.24786	8.26907	0.2255035	0.26799360	2.3826108	17	4 5.0	16.0
1433 Geramitina	11.5	X	19.22200	93.97490	321.57142	8.23690	0.1715794	0.21081872	2.7959534	17	—	—
1434 Margot	10.43	X	86.58909	147.81423	152.41634	10.83192	0.0652803	0.18791784	3.0187284	17	11 12.2	14.9
1435 Garlena	13.0	X	259.54330	268.73074	189.20226	4.03943	0.2507289	0.22927313	2.6438326	17	8 21.4	17.1
1436 Salonta	10.2	X	328.12759	29.89460	260.41860	13.88925	0.0623251	0.17660578	3.1462950	17	5 11.9	14.5
1437 Diomedes	8.30	X	217.49518	131.21785	315.79604	20.48816	0.0436809	0.08318722	5.1971468	17	7 23.6	15.4
1438 Wendeline	11.5	X	39.84525	129.64054	238.34241	2.04124	0.2372632	0.17548185	3.1597150	17	12 26.0	15.5
1439 Vogtia	10.45	X	275.50735	101.72283	35.57483	4.20329	0.1177982	0.12307479	4.0027333	17	11 9.7	16.0
1440 Rostia	12.4	X	95.52593	349.81857	46.8524							

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1441 Bolyai	13.2 ^m	X	287.11502	116.01336	254.02005	13.91782	0.2386778	0.23093921	2.6311015	17	5 30.7	17.0
1442 Corvina	11.57	X	238.97459	126.87571	220.70807	1.25980	0.0760805	0.20187669	2.8779192	17	3 31.9	15.8
1443 Ruppina	11.0	X	61.18042	163.10797	174.89233	1.92987	0.0641598	0.19570504	2.9381099	17	11 25.2	14.9
1444 Pannonia	11.3	X	304.12438	310.70583	303.30808	17.75585	0.1394379	0.17599532	3.1535664	17	2 11.9	16.0
1445 Konkolya	11.84	X	273.64928	274.20992	88.92024	2.28072	0.1819754	0.17896305	3.1186057	17	5 20.4	16.5
1446 Sillanpää	12.6	X	156.60220	196.32402	17.54964	5.25701	0.1013173	0.29283948	2.2458615	17	10 18.5	15.7
1447 Utra	11.7	X	285.64134	64.08566	35.52744	4.78656	0.0415082	0.24416928	2.5351794	17	10 27.6	14.8
1448 Lindbladia	12.9	X	287.41603	74.62619	44.90249	5.81922	0.1842270	0.26954958	2.3734328	17	11 7.2	15.3
1449 Virtanen	12.1	X	289.07794	132.15821	110.78178	6.64129	0.1419429	0.29749985	2.2223454	17	—	—
1450 Raimonda	12.3	X	351.45338	13.42683	74.92727	4.86348	0.1713257	0.23351929	2.6116855	17	—	—
1451 Granö	13.1	X	60.92838	51.85750	175.28725	5.10872	0.1174932	0.30141979	2.2030357	17	6 29.4	15.1
1452 Hunnia	12.1	X	194.77614	94.48698	21.35210	14.21102	0.2025443	0.17973789	3.1096365	17	7 28.2	17.6
1453 Fennia	12.5	X	72.85612	254.78768	7.08985	23.67508	0.0280619	0.37722589	1.8970046	17	9 9.0	14.4
1454 Kalevala	12.7	X	170.32961	134.63504	352.54840	5.09056	0.1433210	0.27111056	2.3643137	17	7 11.7	16.3
1455 Mitchellia	12.8	X	321.18491	100.60499	128.33418	7.75480	0.1247901	0.29263564	2.2469043	17	1 7.4	15.6
1456 Saldanha	10.93	X	312.57746	65.17931	282.45798	10.43687	0.2198887	0.17180764	3.2046042	17	6 12.2	15.2
1457 Ankara	10.8	X	107.66558	296.38594	296.30184	6.09064	0.1544937	0.22248680	2.6973246	17	9 19.6	14.9
1458 Mineura	11.3	X	338.82842	99.88791	181.65829	12.53917	0.1797146	0.23149929	2.6268561	17	4 22.5	14.3
1459 Magnya	10.4	X	121.52956	328.80610	41.54052	16.93969	0.2329722	0.17682326	3.1437146	17	1 22.1	15.2
1460 Haltia	12.6	X	245.72422	358.22320	74.18495	6.68584	0.1880091	0.24315623	2.5422160	17	7 13.3	16.6
1461 Jean-Jacques	10.01	X	183.52321	335.40693	104.64263	15.31382	0.0480457	0.17841273	3.1250153	17	5 31.6	14.8
1462 Zamenhof	11.2	X	7.04331	187.54565	24.80940	0.96573	0.1099517	0.17633308	3.1495380	17	3 26.5	15.1
1463 Nordenmarkia	10.6	X	169.68752	78.84986	329.47727	7.25403	0.1907062	0.17565676	3.1599081	17	4 10.3	15.9
1464 Armisticia	11.0	X	265.40139	52.84905	86.89680	11.56419	0.0465582	0.18921670	3.0048981	17	11 18.6	15.2
1465 Autonoma	11.6	X	350.82212	50.82872	166.98569	9.92481	0.1800325	0.18711317	3.0273768	17	2 23.6	15.3
1466 Mündleria	12.1	X	247.59120	74.77149	155.00514	13.14660	0.1568539	0.26895185	2.3769480	17	—	—
1467 Mashona	8.57	X	255.29776	349.55094	326.49768	21.90980	0.1296345	0.15807115	3.3876691	17	3 8.0	14.0
1468 Zomba	12.7	X	95.27541	23.18746	308.93324	9.93885	0.2713308	0.30296058	2.1955599	17	—	—
1469 Linzia	9.9	X	52.44404	207.32532	188.96331	13.39808	0.0666648	0.17858519	3.1230032	17	—	—
1470 Carla	11.1	X	36.41673	341.79981	358.43293	3.21229	0.0690772	0.17547013	3.1598557	17	10 24.2	15.2
1471 Tornio	11.0	X	187.83924	94.02746	321.96842	13.60361	0.1178563	0.22006553	2.7170734	17	4 23.9	15.5
1472 Muonio	12.4	X	247.14248	318.95843	45.19763	4.56736	0.1982118	0.29506256	2.2345666	17	4 11.6	15.9
1473 Ounas	11.7	X	67.58625	129.40103	216.52113	13.65088	0.2377333	0.23864909	2.5741244	17	—	—
1474 Beira	12.66	X	19.60938	84.06970	323.49727	26.68317	0.4906626	0.21813992	2.7330397	17	—	—
1475 Yalta	12.8	X	248.85805	201.67516	200.17379	4.50439	0.1687298	0.27384102	2.3485711	17	6 5.3	16.4
1476 Cox	13.0	X	200.24964	349.94421	330.56722	6.32883	0.1904427	0.28617057	2.2806190	17	1 7.2	16.4
1477 Bonsdorffia	11.59	X	69.90319	103.38080	320.65424	15.71302	0.2751259	0.17222404	3.1994367	17	1 19.0	14.9
1478 Vihuri	12.63	X	216.50420	161.04162	318.57173	7.83262	0.0901409	0.25447903	2.4662365	17	8 19.7	16.1
1479 Inkeri	11.9	X	91.08253	80.00378	18.10986	7.30243	0.1920211	0.22491932	2.6778416	17	3 11.7	14.9
1480 Aunus	13.2	X	143.50628	64.88430	63.67730	4.86205	0.1093126	0.30163667	2.2019796	17	6 6.0	15.8
1481 Tübingia	10.34	X	283.84467	312.17703	353.73812	3.50981	0.0429890	0.18785288	3.0194243	17	4 5.9	14.7
1482 Sebastiana	11.04	X	2.04698	213.56664	71.02196	2.97274	0.0354437	0.20254064	2.8716264	17	6 22.2	14.8
1483 Hakoila	11.8	X	273.52413	88.05258	71.89522	4.49512	0.1764201	0.21981969	2.7190988	17	12 6.3	15.1
1484 Postrema	10.8	X	194.21503	126.81529	72.76650	17.30053	0.2036481	0.21737670	2.7394333	17	11 5.3	15.5
1485 Isa	11.7	X	351.42503	47.13329	297.54537	8.92248	0.1150735	0.18724078	3.0260012	17	8 21.7	15.4
1486 Marilyn	12.8	X	93.48252	350.09891	333.24816	0.07516	0.1246256	0.30235903	2.1984711	17	—	—
1487 Boda	11.2	X	291.77032	108.50220	97.06268	2.46701	0.1210950	0.17747564	3.1360059	17	—	—
1488 Aura	10.2	X	314.60212	112.06526	354.50918	10.53228	0.1197707	0.18598020	3.0396593	17	11 30.0	14.2
1489 Attila	11.6	X	279.64435	25.74332	154.81515	2.45325	0.1437844	0.17251243	3.1958701	17	—	—
1490 Limpopo	12.1	X	118.55286	90.76449	254.27383	10.02030	0.1554326	0.27320443	2.3522179	17	—	—
1491 Balduinus	11.4	X	342.14305	155.31871	313.48606	3.67162	0.1365528	0.16939434	3.2349690	17	—	—
1492 Oppolzer	12.9	X	262.58421	81.41873	137.80238	6.05787	0.1164694	0.19771913	2.1728665	17	—	—
1493 Sigrid	11.99	X	318.09364	1.68828	330.57881	2.57724	0.2008552	0.26026671	2.4295376	17	5 19.9	14.8
1494 Savo	12.3	X	114.28962	184.32093	195.02010	2.45604	0.1314733	0.30414959	2.1898342	17	—	—
1495 Helsinki	11.4	X	215.33733	268.61343	13.11820	12.73247	0.1561600	0.23012142	2.6373313	17	—	—
1496 Turku	12.5	X	90.54700	0.92675	294.37743	2.50049	0.1618606	0.30080480	2.2060374	17	11 28.7	15.5
1497 Tampere	11.4	X	41.97980	30.09197	300.21383	1.06027	0.0817806	0.20004149	2.8954939	17	10 22.9	15.2
1498 Lahti	11.8	X	167.97071	96.55462	265.25222	12.64004	0.2400323	0.18061311	3.0995825	17	2 14.3	17.3
1499 Pori	11.3	X	80.65508	74.92605	239.61628	12.18040	0.1862938	0.22585980	2.6704027	17	12 8.4	15.2
1500 Jyväskylä	13.06	X	172.96516	17.10041	19.92471	7.43588	0.1894185	0.29329411	2.2435400	17	3 18.2	16.2
1501 Baade	12.0	X	145.45927	13.50466	17.00783	7.31791	0.2404395	0.24258232	2.5462241	17	2 25.8	15.8
1502 Arenda	11.5	X	117.92841	274.67077	204.34973	4.09516	0.0884088	0.21826458	2.7319990	17	4 30.0	15.1
1503 Kuopio	10.4	X	154.92971	177.91660	316.97527	12.36929	0.1047060	0.23178206	2.6247192	17	7 6.3	14.4
1504 Lappeenranta	11.88	X	67.94229	51.07399	94.86620	11.04887	0.1578856	0.26516407	2.3995305	17	3 25.4	14.3
1505 Koranna	11.3	X	15.93193	342.43708	248.27662	14.47119	0.1337215	0.22726971	2.6593470	17	4 17.5	14.3
1506 Xosa	12.0	X	338.30194	45.15343	234.53173	12.54975	0.2595395	0.23880729	2.5729874	17	3 28.2	15.2
1507 Vaasa	13.7	X	333.76097	50.54774	292.80767	9.22517	0.2442611	0.27686073	2.3314627	17	6 24.5	15.8
1508 Kemi	12.03	X	354.03562	92.89244	14.29766	28.72338	0.4166717	0.21360406	2.7715946	17	—	—
1509 Esclangona	12.64	X	225.07653	267.81941	283.52406	22.31961	0.0321254	0.38656056	1.8663411	17	12 30.4	14.2
1510 Charlois	11.5	X	16.61934	165.24605	331.49339	11.82094	0.1470447	0.22565408	2.6720254	17	—	—
1511 Daléra	12.8	X	235.58384	97.43957	81.72989	4.06878	0.1084520	0.27221148	2.3579346	17	11 28.8	15.9
1512 Oulu	9.62	X	333.82755	238.20239	10.16807	6.47858	0.1466490	0.12452234	3.9716520	17	3 29.6	14.6
1513 Mátra	13.33	X	324.55024	27.13970	136.22000	3.97734	0.0985750	0.30361995	2.1923801	17	—	—
1514 Ricouxa	12.7	X	41.91412	179.38508	145.85293	4.53491	0.1994690	0.29386078	2.2406549	17	11 13.9	15.0
1515 Perotin	12.9	X	227.70397	350.66521	49.19389	10.67985	0.2354968	0.23907689	2.5710527	17	5 13.6	17.3
1516 Henry	11.9	X	216.91430	94.45703	125.84092	8.74402	0.1852767	0.23204543	2.6227327	17	12 17.5	16.0
1517 Beograd	11.1	X	159.07560	231.89161	63.88859	5.27747	0.0452201	0.22015082	2.7163716	17	—	—
1518 Rovaniemi	12.4	X	246.56066	37.10124	27.80357	6.71376	0.1437325	0.29695325	2.2250716	17	7 4.9	15.7
1519 Kajaani	11.5	X	93.64619	339.44906	15.87095	12.60564	0.2411311	0.17851919	3.1237729	17	—	—
1520 Imatra	10.4	X	179.71360	116.82663	253.39806							

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1521 Seinäjoki	11.8 ^m	X	123.44008	48.80520	12.59305	15.05945	0.1367114	0.20448762	2.8533697	17	3 8.2	15.9
1522 Kokkola	12.43	X	196.44592	30.54244	60.61724	5.35225	0.0727216	0.27053620	2.3676589	17	6 18.3	15.6
1523 Pieksämäki	12.4	X	131.04141	187.58507	327.78518	5.14115	0.0932937	0.29363626	2.2417969	17	6 28.0	15.2
1524 Joensuu	10.7	X	88.69862	2.76106	347.71848	12.68692	0.1219147	0.17979064	3.1090282	17	—	—
1525 Savonlinna	12.9	X	235.57194	64.80589	279.06412	5.85895	0.2633676	0.22222041	2.6994799	17	3 11.9	17.8
1526 Mikkeli	13.2	X	22.21946	72.38912	337.02224	6.20478	0.1879842	0.27984094	2.3148803	17	—	—
1527 Malmquista	12.0	X	203.98703	304.49149	16.13333	5.19395	0.1986630	0.29656674	2.2270044	17	1 9.1	15.4
1528 Conrada	11.7	X	190.57763	59.41489	139.38670	8.51285	0.1438664	0.26266262	2.4147409	17	11 4.2	15.5
1529 Oterma	10.05	X	50.49702	295.08076	100.59481	9.05821	0.2005933	0.12355220	3.9924154	17	—	—
1530 Rantaseppä	13.3	X	139.42655	84.67759	285.87987	4.41838	0.1992042	0.29235462	2.2483439	17	1 1.4	15.6
1531 Hartmut	11.7	X	146.73393	143.09151	278.92471	12.39604	0.1519503	0.23113264	2.6296333	17	3 20.7	15.8
1532 Inari	10.7	X	325.80022	122.84595	330.63470	8.77690	0.0521121	0.18918946	3.0051865	17	12 6.5	14.8
1533 Saimaa	10.82	X	346.96131	10.47821	156.74324	10.71014	0.0371315	0.18865703	3.0108380	17	1 4.7	15.1
1534 Näsi	11.8	X	174.04201	42.82567	62.13520	9.79417	0.2520391	0.21875351	2.7279267	17	6 22.4	16.6
1535 Päijänne	11.3	X	23.10009	39.92143	264.79485	6.05605	0.1916336	0.17502556	3.1652041	17	8 28.0	14.8
1536 Pielinen	12.7	X	295.84505	170.76512	195.69417	1.53436	0.1952625	0.30124394	2.2038930	17	6 3.6	15.5
1537 Transylvania	12.4	X	143.95167	148.19987	230.07246	3.85909	0.3000892	0.18486322	3.0518912	17	2 21.7	17.5
1538 Detre	14.3	X	65.57826	13.77455	343.25273	9.44271	0.2190334	0.27150419	2.3620279	17	—	—
1539 Borrelly	11.2	X	268.31490	250.53822	142.96758	1.73199	0.1989869	0.17682588	3.1436836	17	6 20.5	16.0
1540 Kevola	10.8	X	37.25915	113.68501	52.46804	11.97093	0.0854205	0.20482404	2.8502444	17	3 13.9	14.5
1541 Estonia	11.4	X	346.22185	192.83710	1.45519	4.87499	0.0695195	0.21395906	2.7685281	17	1 27.5	15.0
1542 Schalén	10.5	X	321.26118	164.04307	211.65962	2.76619	0.1159855	0.18116646	3.0932678	17	8 15.5	14.3
1543 Bourgeois	12.0	X	307.05790	25.79906	287.95183	11.02114	0.3235853	0.23065338	2.6332747	17	3 24.1	16.3
1544 Vinterhansenia	11.9	X	251.35167	356.50633	59.97301	3.33419	0.1054251	0.26964642	2.3728645	17	7 4.2	15.2
1545 Thernöe	11.8	X	84.91658	90.54242	51.79930	2.95418	0.2383296	0.21380938	2.7698200	17	5 9.6	15.0
1546 Izsák	10.7	X	77.41697	280.93988	190.47316	16.13846	0.1227001	0.17391774	3.1786311	17	3 7.6	15.0
1547 Nele	10.75	X	245.66630	154.93855	291.33452	11.74351	0.2541990	0.22935623	2.6431939	17	7 24.5	15.2
1548 Palomaa	11.5	X	238.44137	88.52969	116.93521	16.54384	0.0789367	0.21168539	2.7883169	17	—	—
1549 Mikko	12.4	X	134.21106	6.69048	85.28933	5.54758	0.0839807	0.29574773	2.2311140	17	4 2.1	15.0
1550 Tито	11.9	X	256.39055	311.14076	64.50001	8.88019	0.3133659	0.24283870	2.5444316	17	5 3.9	16.4
1551 Argelander	12.1	X	347.73473	233.70500	107.23790	3.76120	0.0662596	0.26600832	2.3944507	17	8 14.1	14.7
1552 Bessel	11.4	X	185.26016	39.60676	9.98359	9.83670	0.0978351	0.18853866	3.0120981	17	4 21.2	16.1
1553 Bauersfelda	11.5	X	236.42398	20.74669	110.96942	3.23485	0.1008638	0.19892761	2.9062926	17	9 27.9	15.7
1554 Yugoslavia	11.2	X	62.17368	131.60360	217.12053	12.15099	0.2023278	0.23257090	2.6187807	17	12 31.5	15.1
1555 Dejan	11.6	X	71.76774	47.82506	318.08457	6.02005	0.2769119	0.22356043	2.6886819	17	—	—
1556 Wingolfia	10.55	X	99.49108	269.34257	91.59391	15.75006	0.1087234	0.15546033	3.4254923	17	—	—
1557 Roehla	11.4	X	287.44931	3.56279	355.21422	10.30028	0.1040198	0.18871354	3.0102369	17	6 7.2	15.8
1558 Järnefelt	10.3	X	105.24562	291.22915	110.93279	10.48885	0.0315870	0.17037219	3.2225790	17	1 10.8	14.7
1559 Kustaanheimo	12.0	X	119.55070	216.58803	327.92416	3.19116	0.1338941	0.26670533	2.3902771	17	8 1.1	15.2
1560 Strattonia	11.6	X	25.22507	94.71675	289.12578	6.28551	0.2140368	0.22414924	2.6839713	17	12 29.5	14.6
1561 Fricke	11.4	X	71.62677	41.09505	230.67234	4.31887	0.1263843	0.17230206	3.1984709	17	9 22.8	15.9
1562 Gondolatsch	11.9	X	115.13228	83.04190	129.48357	4.88341	0.0780236	0.29670168	2.2263292	17	8 27.3	14.5
1563 Noël	12.4	X	347.56751	116.40655	53.64844	5.98287	0.0856191	0.30384309	2.1913065	17	—	—
1564 Srbija	10.88	X	141.68498	230.16681	177.59670	11.01082	0.1961675	0.17395378	3.1781920	17	3 19.6	15.7
1565 Lemaître	12.5	X	236.27618	116.33520	261.16097	21.48453	0.3477569	0.26612253	2.3937656	17	4 11.2	17.4
1566 Icarus	16.9	X	31.62857	31.38634	88.00485	22.82426	0.268342	0.88047746	1.0780955	17	—	—
1567 Alikoski	9.47	X	135.05144	110.87171	51.45418	17.27895	0.0836085	0.17136603	3.2101074	17	7 22.3	14.5
1568 Aisleen	11.7	X	221.75837	229.02588	146.17834	24.86713	0.2538205	0.27307800	2.3529439	17	4 11.6	16.2
1569 Evita	11.2	X	95.58159	249.73723	99.50909	12.26690	0.1334969	0.17656544	3.1467742	17	—	—
1570 Brunonia	12.0	X	102.11390	223.95085	190.10165	1.66644	0.0557840	0.20553382	2.8436787	17	1 13.5	15.8
1571 Cesco	11.6	X	131.38525	140.34189	292.52713	14.55785	0.1112539	0.17651261	3.1474021	17	3 20.7	16.5
1572 Posnania	10.2	X	138.10317	354.31777	6.09831	13.29469	0.2075461	0.18011258	3.1053223	17	1 24.2	15.1
1573 Väisälä	12.3	X	224.99504	173.90724	202.37818	24.55282	0.2308094	0.26983611	2.3717482	17	4 9.3	16.2
1574 Meyer	9.8	X	137.01067	262.24000	245.64481	14.47880	0.0348985	0.14818113	3.5367751	17	6 28.5	15.0
1575 Winifred	12.1	X	158.54575	348.39824	206.84188	24.82679	0.1788586	0.26939892	2.3743176	17	9 24.9	16.1
1576 Fabiola	11.04	X	130.29766	244.20076	166.61805	0.95140	0.1664863	0.17628341	3.1501296	17	3 8.0	15.5
1577 Reiss	12.7	X	272.77637	266.55237	123.54884	4.35551	0.1666615	0.29598239	2.2299346	17	6 13.5	15.8
1578 Kirkwood	10.26	X	195.22591	1.77321	74.00192	0.80848	0.2390973	0.12681851	3.9235658	17	6 9.3	16.8
1579 Herrick	10.68	X	243.88215	280.17203	184.14145	8.76207	0.1262966	0.15462584	3.4378058	17	8 27.0	15.9
1580 Betulia	14.8	X	252.41322	159.49597	62.29133	52.09578	0.4875911	0.30263509	2.1971339	17	12 10.5	18.6
1581 Abanderada	10.85	X	40.22312	90.21692	104.81572	2.53883	0.1241817	0.17570003	3.1570988	17	4 29.0	14.5
1582 Martir	11.3	X	29.63799	128.09770	93.91385	11.60799	0.1276315	0.17590064	3.1546978	17	5 19.1	15.1
1583 Antilochus	8.60	X	239.76396	187.46935	221.37956	28.51287	0.0517096	0.08483983	5.1294351	17	6 25.4	15.9
1584 Fuji	10.67	X	259.11577	188.64753	305.39450	26.61418	0.1939824	0.26894469	2.3769902	17	9 27.8	14.7
1585 Union	10.66	X	304.39147	264.53667	150.09598	26.18666	0.3090770	0.19670464	2.9281477	17	8 11.1	14.5
1586 Thiele	12.1	X	249.77584	29.91781	125.87863	4.05511	0.1042565	0.26015445	2.4302365	17	11 16.3	15.2
1587 Kahrstedt	11.1	X	356.84542	97.17697	357.59419	7.83373	0.1537714	0.24281404	2.5446039	17	—	—
1588 Descamisada	11.3	X	141.66892	224.92805	98.59106	11.26844	0.0727422	0.18710164	3.0275011	17	—	—
1589 Fanatica	11.9	X	268.75344	289.75232	90.32235	5.26295	0.0930438	0.26234642	2.4166808	17	6 7.3	15.0
1590 Tsiolkovskaja	11.7	X	102.49373	52.66410	226.53884	4.35166	0.1568054	0.29587936	2.2304523	17	11 20.1	14.8
1591 Baize	11.4	X	323.77149	163.44705	90.53920	24.81942	0.1763029	0.26643525	2.3918921	17	2 19.5	15.1
1592 Mathieu	12.0	X	124.11954	178.04620	106.13406	13.53251	0.3048163	0.21413226	2.7670350	17	12 17.9	17.0
1593 Fagnes	13.1	X	314.60250	185.26952	120.02327	9.97853	0.2810623	0.29698186	2.2249287	17	3 25.9	16.4
1594 Danjon	11.9	X	38.94100	222.21701	69.41661	8.94552	0.1948957	0.28834607	2.2691334	17	9 20.8	14.0
1595 Tanga	12.02	X	75.67546	190.43622	112.19091	4.16358	0.1107729	0.22905944	2.6454766	17	11 9.8	15.6
1596 Itzigsohn	10.6	X	302.91490	160.74748	249.09450	13.28164	0.1303760	0.20065098	2.8896275	17	8 24.9	14.7
1597 Laugier	11.7	X	67.76425	52.04159	158.62744	11.81227	0.0906085	0.20543186	2.8446195	17	6 24.4	15.6
1598 Paloque	12.7	X	246.85838	301.14050	298.06250	7.53503	0.0811116	0.27682233	2.3316784	17	—	—
1599 Giomus	11.1	X	10.09478	356.53051	43.43170	6.09002	0.1437134	0.17802090	3.1295992	17	12 7.3	14.8
1600 Vyssotsky	12.6	X	199.42043	50.54327	60.60151	21.						

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1601 Patry	12.32 ^m	X	170.19209	196.73479	74.66747	4.93999	0.1294309	0.29517194	2.2340146	17	—	—
1602 Indiana	12.49	X	57.22623	73.43680	75.13362	4.16178	0.1045047	0.29301192	2.2449803	17	2 17.6	14.4
1603 Neva	10.9	X	319.91275	257.40840	130.01158	8.55731	0.0952598	0.21557782	2.7546515	17	9 3.5	14.3
1604 Tombaugh	10.4	X	359.39305	38.19888	309.09923	9.39409	0.1016653	0.18747093	3.0235241	17	9 7.1	14.1
1605 Milankovitch	10.2	X	310.78940	276.14037	173.74012	10.56217	0.0775818	0.18841660	3.0133987	17	11 12.5	14.2
1606 Jekhovskiy	12.17	X	63.74784	142.96926	190.34703	7.71835	0.3182987	0.22359087	2.6884379	17	12 28.7	16.4
1607 Mavis	11.4	X	158.85506	235.95659	122.52964	8.57895	0.3047235	0.24206951	2.5498188	17	2 3.9	15.5
1608 Muñoz	12.7	X	32.72161	316.47927	356.97252	3.94357	0.1693107	0.29915929	2.2141195	17	10 2.6	14.5
1609 Brenda	10.6	X	309.07636	229.13679	105.23254	18.62829	0.2480873	0.23722887	2.5843878	17	5 14.7	14.4
1610 Mirnaya	13.4	X	67.64002	14.72395	359.73293	2.19957	0.1994176	0.30159468	2.2021840	17	—	—
1611 Beyer	11.8	X	150.68816	75.71671	237.54152	4.28177	0.1606955	0.17432506	3.1736778	17	—	—
1612 Hirose	10.8	X	82.67881	243.97594	319.50521	16.84044	0.0941943	0.18056755	3.1001039	17	7 11.8	15.2
1613 Smiley	11.7	X	228.04862	127.08655	320.78324	7.98682	0.2619237	0.21809461	2.7334183	17	7 13.9	16.5
1614 Goldschmidt	10.7	X	270.56587	342.83308	162.39486	14.07162	0.0701126	0.18983884	2.9983294	17	11 28.7	15.1
1615 Bardwell	11.38	X	169.71365	252.97631	152.55171	1.69011	0.1794175	0.17819751	3.1275310	17	4 9.7	16.4
1616 Filipoff	11.2	X	340.66150	13.63991	48.27526	8.48211	0.0201248	0.19843709	2.9110800	17	11 19.6	15.1
1617 Alschmitt	10.8	X	167.85018	24.21620	154.96229	13.26489	0.1276957	0.17218422	3.1999301	17	9 15.3	15.9
1618 Dawn	11.1	X	86.04340	182.45074	102.93224	3.22446	0.0269951	0.20275136	2.8696363	17	10 18.2	15.0
1619 Ueta	12.15	X	5.94458	328.18016	61.49384	6.21421	0.1765690	0.29378287	2.2410510	17	12 9.7	13.9
1620 Geographos	15.60	X	246.00313	276.89823	337.20374	13.33746	0.3354012	0.70927382	1.2452602	17	—	—
1621 Druzhba	11.63	X	73.18723	238.13905	181.88380	3.17296	0.1188042	0.29599447	2.2298740	17	—	—
1622 Chacornac	12.2	X	146.40840	256.53295	4.36439	6.46076	0.1629822	0.29504106	2.2346752	17	12 8.3	15.7
1623 Vivian	11.3	X	72.04444	316.97441	115.62400	2.49030	0.1555092	0.17689134	3.1429080	17	1 14.7	15.1
1624 Rabe	11.3	X	286.81541	21.57753	133.42644	1.98632	0.0900306	0.17262980	3.1944214	17	12 23.9	15.4
1625 The NORC	10.34	X	147.85630	286.20334	320.78107	15.55209	0.2291573	0.17282041	3.1920721	17	11 11.9	16.2
1626 Sadeya	11.1	X	11.17502	148.78804	279.53393	25.28700	0.2740706	0.27115765	2.3640399	17	—	—
1627 Ivar	13.2	0.60	229.01588	167.76348	133.14386	8.45131	0.3965908	0.38767436	1.8627647	17	—	—
1628 Strobel	10.02	X	244.37936	289.14397	181.19202	19.38716	0.0674746	0.18854814	3.0119971	17	9 11.0	14.5
1629 Pecker	12.4	X	126.76527	106.72319	32.70475	9.69886	0.1548832	0.29431578	2.2383449	17	10 28.1	15.8
1630 Milet	11.5	X	143.20535	95.49056	54.45824	4.53765	0.1693185	0.18708053	3.0277289	17	7 19.9	16.3
1631 Kopff	12.1	X	107.17194	315.11009	16.82652	7.49438	0.2138143	0.29497039	2.2350321	17	—	—
1632 Sieböhme	11.7	X	68.73451	127.20686	199.80219	5.71710	0.1371371	0.22774368	2.6556560	17	12 4.9	15.3
1633 Chimay	10.6	X	237.33217	65.53946	114.08211	2.67590	0.1240788	0.17263679	3.1943352	17	11 20.6	15.4
1634 Ndola	12.8	X	162.52265	191.08003	90.72352	7.59743	0.1618343	0.29284574	2.2458294	17	—	—
1635 Bohrmann	11.0	X	357.18884	136.06363	184.35252	1.82215	0.0574903	0.20448413	2.8534021	17	8 1.5	14.6
1636 Porter	12.3	X	163.44123	239.42341	168.37527	4.43495	0.1271983	0.29488655	2.2354557	17	3 13.1	15.1
1637 Swings	10.4	X	123.47355	236.17283	21.28806	14.06826	0.0444551	0.18303299	3.0722022	17	10 26.0	14.8
1638 Ruanda	11.6	X	348.16981	86.23814	200.56191	0.29255	0.1874019	0.21616738	2.7496407	17	5 16.9	14.6
1639 Bower	10.98	X	307.04586	106.28323	324.20319	8.43891	0.1507267	0.23888222	2.5724494	17	9 29.7	14.0
1640 Nemo	13.3	X	20.33683	354.89758	355.46536	7.10813	0.3427834	0.28460349	2.2889830	17	12 5.6	15.2
1641 Tana	10.5	X	220.80736	359.49709	331.62265	9.32926	0.1006535	0.18775908	3.0204298	17	2 23.4	15.2
1642 Hill	10.8	X	30.98960	149.57821	339.19078	10.80538	0.0646995	0.21590430	2.7518738	17	1 7.0	14.4
1643 Brown	12.5	X	267.30697	90.30394	287.92332	3.51438	0.2019967	0.25104333	2.4886869	17	5 22.1	16.3
1644 Rafita	11.82	X	13.78374	197.05373	270.89828	7.01934	0.1547538	0.24228934	2.5482763	17	—	—
1645 Waterfield	11.1	X	217.01397	105.05192	265.50214	1.02237	0.1088425	0.18361909	3.0656613	17	4 7.8	15.8
1646 Rosseland	11.82	X	320.86308	279.82480	119.98379	8.37874	0.1199650	0.27180252	2.3602992	17	9 22.9	14.3
1647 Menelaus	10.5	X	84.25213	299.27844	240.31684	5.65080	0.0217478	0.08279325	5.2136208	17	6 10.2	17.3
1648 Shajna	12.54	X	250.93270	134.70656	130.42262	4.57229	0.2065352	0.29489175	2.2354294	17	—	—
1649 Fabre	12.0	X	244.06972	10.56215	145.47103	10.81794	0.0450487	0.18758882	3.0222572	17	11 13.7	16.5
1650 Heckmann	11.56	X	117.53729	56.94207	199.75922	2.74995	0.1626225	0.25927125	2.4357524	17	11 4.8	15.1
1651 Behrens	12.1	X	147.98432	339.09574	187.51292	5.07520	0.0661257	0.30630174	2.1795646	17	7 30.9	14.9
1652 Hergé	12.3	X	34.96022	13.10655	251.72193	3.19886	0.1497748	0.29181638	2.2511077	17	7 13.6	14.0
1653 Yakhontovia	11.6	X	324.50892	88.94448	303.98899	4.07005	0.3235289	0.23373346	2.6100899	17	8 11.5	14.0
1654 Bojeva	10.8	X	160.61263	332.03060	25.31654	10.45072	0.0900645	0.18825220	3.0151529	17	1 28.2	15.4
1655 Comas Solá	11.04	X	323.80929	323.52114	111.13705	9.60026	0.2357667	0.21260650	2.7802575	17	11 2.3	13.8
1656 Suomi	12.9	X	174.69263	287.44342	175.56835	25.06728	0.1235073	0.38314178	1.8774269	17	6 2.8	15.9
1657 Roemera	12.84	X	253.33091	54.40870	105.32145	23.37213	0.2359955	0.27378210	2.3489080	17	11 16.6	16.5
1658 Innes	11.52	X	247.27024	188.76046	95.44109	9.09407	0.1844124	0.24085848	2.5583586	17	1 12.2	15.7
1659 Punkaharju	9.9	X	243.67719	36.25720	338.25797	16.42556	0.2588393	0.21199318	2.7856173	17	4 19.6	15.0
1660 Wood	11.7	X	182.68093	276.65699	212.94037	20.57479	0.3016002	0.26593806	2.3948724	17	7 22.9	16.5
1661 Granule	12.9	X	121.09729	328.07509	261.69346	3.03531	0.0906951	0.30541764	2.1837687	17	9 27.6	15.7
1662 Hoffmann	11.6	X	219.53984	63.64070	330.57808	4.22851	0.1718801	0.21689607	2.7434787	17	5 2.3	16.2
1663 van den Bos	11.9	X	33.12772	275.24305	83.19615	5.36173	0.1803682	0.29405154	2.2396857	17	12 13.2	13.9
1664 Felix	12.5	X	271.50674	107.64016	44.06225	6.11899	0.2242162	0.27555920	2.3387983	17	11 20.9	15.2
1665 Gaby	11.85	X	165.85668	5.91657	91.54329	10.83532	0.2075153	0.26284403	2.4136297	17	6 2.4	15.7
1666 van Gent	12.6	X	314.49809	83.72957	263.11372	2.68771	0.1821312	0.30509864	2.1852906	17	6 2.4	14.9
1667 Pels	11.9	X	353.37901	195.96027	80.86592	4.61730	0.1558118	0.30415657	2.1898007	17	4 27.8	13.7
1668 Hanna	12.2	X	295.20470	191.13852	160.97314	4.73930	0.2141634	0.20954018	2.8073152	17	5 23.6	16.2
1669 Dagmar	10.97	X	126.57797	178.21251	18.97802	0.94093	0.1106822	0.17717627	3.1395375	17	8 25.1	15.5
1670 Minnaert	11.38	X	216.96457	20.35061	59.12560	10.50895	0.1045583	0.19962932	2.8994781	17	6 30.9	15.9
1671 Chaika	12.1	X	298.08542	250.32740	177.17867	3.96591	0.2570805	0.23680727	2.5874543	17	8 27.1	15.1
1672 Gezelle	11.5	X	183.87319	255.11746	181.28978	1.06723	0.2764001	0.17447069	3.1719115	17	5 30.3	17.1
1673 van Houten	12.1	X	201.71482	209.18089	208.03039	3.59046	0.1807173	0.18053123	3.1005197	17	5 20.4	17.2
1674 Groeneveld	11.06	X	50.91259	0.31848	95.66692	2.66206	0.1225264	0.17243831	3.1967858	17	1 9.1	14.8
1675 Simonida	11.8	X	18.85949	50.11395	30.14510	6.79646	0.1245726	0.29533882	2.2331729	17	—	—
1676 Kariba	12.6	X	141.04668	204.67470	54.56163	6.12970	0.1870434	0.29479215	2.2359329	17	12 2.3	16.2
1677 Tycho Brahe	11.7	X	81.35113	318.30302	337.91640	14.85305	0.1071300	0.24458245	2.5323235	17	10 31.7	15.5
1678 Hveen	10.9	X	221.52085	121.60350	351.59535	10.19752	0.1106043	0.17564772	3.1577255	17	8 20.0	15.8
1679 Nevanlinna	10.7	X	236.20980	90.37464	177.50287	17.97678	0.1537138					

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1681 Steinmetz	11.56	X	169.21620	1.65569	94.37288	7.20633	0.2047788	0.22259372	2.6964608	17	6 6.2	15.9
1682 Karel	12.7	X	106.48870	9.90630	325.77959	4.02762	0.1921078	0.29428858	2.2384829	17	—	—
1683 Castafiore	11.6	X	331.15566	346.86513	326.65641	12.47623	0.1756399	0.21778778	2.7359850	17	5 22.8	15.2
1684 Iguassú	10.9	X	113.35894	154.27285	105.40267	3.66645	0.1249747	0.18074840	3.0980357	17	10 28.6	15.6
1685 Toro	14.23	X	33.96500	127.15583	274.27152	9.38042	0.4361520	0.61634916	1.3674712	17	—	—
1686 De Sitter	11.1	X	258.22863	294.39432	6.58340	0.62064	0.1621140	0.17516956	3.1634692	17	2 22.9	16.2
1687 Glarona	10.25	X	62.84068	316.57344	93.56969	2.63669	0.1764540	0.17565830	3.1575987	17	—	—
1688 Wilkens	12.7	X	158.97119	42.39909	245.76618	11.76345	0.2421766	0.23277339	2.6172618	17	—	—
1689 Floris-Jan	11.82	X	218.98269	265.10305	123.18931	6.37571	0.2057630	0.25696287	2.4503181	17	4 24.1	16.0
1690 Mayrhofer	11.1	X	24.19741	156.45765	230.45142	13.04918	0.0984168	0.18607923	3.0385807	17	12 9.5	15.1
1691 Oort	10.95	X	240.24628	232.68982	174.54636	1.08602	0.1750392	0.17530570	3.1618313	17	6 11.4	16.0
1692 Subbotina	11.3	X	162.28536	112.18144	199.66045	2.42770	0.1384341	0.21198112	2.7857229	17	—	—
1693 Hertzsprung	10.97	X	164.16153	234.93457	69.98906	11.94185	0.2736149	0.21087463	2.7954592	17	—	—
1694 Kaiser	11.46	X	125.25289	356.15306	13.42069	11.10254	0.2584241	0.26594775	2.3948143	17	—	—
1695 Walbeck	12.5	X	141.64990	139.42070	218.45593	16.70549	0.2915744	0.21250001	2.7811862	17	1 18.4	17.1
1696 Nurmela	13.0	X	18.64893	165.00928	21.04069	6.03820	0.0984386	0.28968119	2.2621558	17	2 6.4	15.3
1697 Koskenniemi	12.8	X	320.38530	91.18577	331.68210	5.65782	0.1718434	0.26939778	2.3743243	17	10 20.1	15.3
1698 Christophe	11.3	X	304.09077	129.26304	27.23629	1.49655	0.1014376	0.17489112	3.1668260	17	—	—
1699 Honkasalo	12.4	X	56.58838	51.77268	273.53798	1.97110	0.1656403	0.29968454	2.2115316	17	11 28.7	14.9
1700 Zvezdara	12.47	X	60.59753	15.30806	356.96482	4.51531	0.2261758	0.27176949	2.3604905	17	—	—
1701 Okavango	10.6	X	97.60785	260.08182	61.26453	16.27607	0.1915101	0.17514486	3.1637667	17	12 27.3	15.7
1702 Kalahari	11.03	X	67.88811	242.21723	103.87381	9.96401	0.1437525	0.20411971	2.8567972	17	12 25.0	15.0
1703 Barry	12.1	X	155.09018	213.41581	112.28165	4.51963	0.1721444	0.29911986	2.2143140	17	—	—
1704 Wachmann	12.9	X	67.04706	280.76648	259.46784	0.97147	0.0870952	0.29741769	2.2227546	17	4 22.1	14.9
1705 Tapio	13.3	X	295.63701	156.44626	188.61352	7.70902	0.2448767	0.28267552	2.2993791	17	5 1.2	16.5
1706 Dieckvoss	13.0	X	357.10845	339.19190	279.72923	1.87593	0.1145876	0.31807804	2.1254306	17	4 5.9	15.0
1707 Chantal	12.54	X	218.95669	43.00080	6.12179	4.03199	0.1710064	0.29820807	2.2188253	17	5 12.5	16.0
1708 Pólit	11.8	X	213.43323	248.96172	192.21203	6.04449	0.3075301	0.19843419	2.9111084	17	6 23.2	17.2
1709 Ukraina	12.75	X	22.53383	42.61477	300.07467	7.55501	0.2137396	0.26867289	2.3785931	17	10 29.6	15.0
1710 Gtohard	13.6	X	204.82590	335.98890	356.61232	8.47269	0.2686937	0.27869822	2.3212037	17	2 2.5	17.6
1711 Sandrine	11.01	X	5.66377	251.24813	134.78032	11.09544	0.1149969	0.18844110	3.0131376	17	11 15.9	14.8
1712 Angola	10.1	X	190.35133	18.21656	237.60643	19.39318	0.1525453	0.17494448	3.1661821	17	12 28.3	15.4
1713 Bancilhon	13.3	X	316.72676	256.37638	61.13452	3.74667	0.1840483	0.29632201	2.2282305	17	4 24.9	16.0
1714 Sy	11.9	X	50.18841	321.00234	300.91277	7.97146	0.1536153	0.23955110	2.5676586	17	8 12.7	14.7
1715 Salli	12.2	X	98.96317	209.20011	38.94857	11.47178	0.2408442	0.26529487	2.3987417	17	10 16.3	15.8
1716 Peter	12.0	X	145.41678	315.55394	243.64922	5.73334	0.0901443	0.21797274	2.7344370	17	9 12.0	16.2
1717 Arlon	12.2	X	224.11267	115.90667	340.48694	6.18809	0.1295035	0.30298850	2.1954251	17	7 25.4	15.4
1718 Namibia	13.8	X	227.74012	133.52160	202.85720	7.70391	0.2774908	0.27084537	2.3658567	17	2 19.9	18.1
1719 Jens	11.6	X	321.62294	58.09619	323.43859	14.28112	0.2225963	0.22767941	2.6561558	17	8 9.1	14.3
1720 Niels	12.8	X	240.20789	308.85930	127.85420	0.73012	0.1045929	0.30450339	2.1881376	17	7 16.7	15.4
1721 Wells	10.9	X	101.63688	137.52085	317.29294	16.10744	0.0463442	0.17621705	3.1509204	17	3 5.4	15.5
1722 Goffin	12.30	X	42.03839	283.19744	168.11830	5.46681	0.0490753	0.24732952	2.5135377	17	—	—
1723 Klemola	10.06	X	211.08681	1.43887	149.82860	10.93436	0.0421761	0.18838068	3.0137819	17	9 29.9	14.5
1724 Vladimir	11.30	X	119.75286	298.50580	164.03277	12.23190	0.0569503	0.22062050	2.7125150	17	4 7.9	15.0
1725 CrAO	11.3	X	219.70876	228.15440	119.18178	3.16866	0.0889791	0.19887807	2.9067752	17	3 13.2	15.7
1726 Hoffmeister	12.3	X	42.06272	69.02562	230.96807	3.48332	0.0421253	0.21175879	2.7876725	17	9 7.6	15.9
1727 Mette	12.5	X	322.85480	312.94156	133.03556	22.89371	0.1018834	0.39038382	1.8541357	17	12 29.4	14.0
1728 Goethe Link	11.4	X	22.34786	66.73264	240.52188	7.18657	0.0892707	0.24014134	2.5634495	17	8 20.1	14.4
1729 Beryl	12.4	X	150.82338	262.40918	9.07279	2.44231	0.1004867	0.29602324	2.2297295	17	12 27.2	15.5
1730 Marceline	12.0	X	146.84931	225.38644	171.45115	9.51048	0.2225603	0.21170300	2.7881622	17	3 7.5	16.4
1731 Smuts	10.5	X	41.05200	203.73253	152.48089	5.93275	0.1271933	0.17477618	3.1682144	17	11 28.7	14.7
1732 Heike	10.9	X	249.18468	211.35576	155.63355	10.77561	0.1109753	0.18838712	3.0137131	17	5 8.7	15.6
1733 Silke	12.8	X	206.41914	306.68353	159.37364	4.43025	0.0839707	0.30356113	2.1926633	17	7 18.4	15.6
1734 Zhongolovich	11.7	X	83.38883	186.44643	182.15648	8.34673	0.2313381	0.21305596	2.7763460	17	—	—
1735 ITA	10.0	X	198.34240	276.02279	9.33784	15.60842	0.1305910	0.17735601	3.1374160	17	—	—
1736 Floirac	12.3	X	331.79924	248.92310	159.80175	4.55018	0.1699200	0.29623425	2.2286705	17	10 24.6	13.7
1737 Severny	11.0	X	112.50618	221.76543	327.43737	9.37721	0.0487164	0.18863510	3.0110713	17	7 23.1	15.3
1738 Oosterhoff	12.5	X	356.52761	284.43103	44.11111	4.87743	0.2025117	0.30547264	2.1835066	17	7 31.9	13.6
1739 Meyermann	12.7	X	26.72977	82.11597	203.34767	3.40930	0.1237452	0.28991077	2.2609614	17	7 27.9	14.5
1740 Paavo Nurmi	13.24	X	43.63908	78.72206	296.09741	1.99942	0.1913083	0.25442439	2.4665895	17	—	—
1741 Giclas	11.5	X	17.73430	338.81550	55.51350	2.88766	0.0704923	0.20117981	2.8845614	17	12 8.5	15.2
1742 Schaifers	11.2	X	316.02354	214.09076	152.19446	2.49807	0.0959072	0.20076855	2.8884993	17	7 28.4	14.8
1743 Schmidt	12.48	X	50.24530	359.54648	189.64065	6.35752	0.1350048	0.25338191	2.4733504	17	4 20.8	14.7
1744 Harriet	13.5	X	212.06550	155.94527	27.48043	4.40819	0.1206926	0.29602551	2.2297181	17	11 6.6	16.5
1745 Ferguson	11.9	X	254.73692	339.03939	78.65180	3.25607	0.0572009	0.20541151	2.8448073	17	7 20.4	15.9
1746 Brouwer	9.95	X	292.04546	47.57965	321.96374	8.36757	0.2075529	0.12565419	3.9477660	17	6 19.7	15.6
1747 Wright	13.35	X	174.62541	340.42753	268.38603	21.41554	0.1102901	0.44107518	1.7092056	17	—	—
1748 Mauderli	10.65	X	223.84981	199.95531	125.94476	3.29368	0.2223286	0.12601281	3.9402725	17	2 28.5	17.1
1749 Telamon	9.5	X	172.65046	113.13807	340.88673	6.09358	0.1069412	0.08433661	5.1498188	17	6 13.1	16.9
1750 Eckert	13.15	X	345.99599	109.00205	273.75738	19.08422	0.1729952	0.36860992	1.9264513	17	10 5.2	14.8
1751 Herget	11.9	X	78.84528	130.93356	240.27178	8.13147	0.1750656	0.21168396	2.7883294	17	—	—
1752 van Herk	13.1	X	344.55991	98.98657	236.83930	3.50678	0.2003050	0.29437191	2.2380604	17	7 11.0	14.6
1753 Mieke	11.1	X	289.63401	229.48837	58.43310	11.36650	0.18810453	0.18800145	3.0178333	17	3 23.2	15.6
1754 Cunningham	9.77	X	81.75307	109.61689	162.89735	12.15165	0.1696124	0.12591940	3.9422209	17	10 14.3	15.5
1755 Lorbach	10.77	X	241.19058	322.07584	157.10738	10.70715	0.0476841	0.18130464	3.0916959	17	9 23.6	15.3
1756 Giacobini	12.0	X	259.32382	100.62688	291.04489	5.10316	0.2313309	0.24231509	2.5480957	17	5 29.9	16.1
1757 Porvoo	13.36	X	263.06278	149.40365	39.42254	3.97657	0.1260404	0.27333933	2.3514440	17	—	—
1758 Naantali	11.1	X	113.47746	113.58786	113.70419	10.82210	0.0313780	0.18900438	3.0071480	17	9 11.3	15.5
1759 Kienle	13.15	X	130.84474	206.16606	158.79567	4.56393	0.3153394	0.22876819	2.6477214	17	1 19.2	16.8
1760 Sandra												

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1761 Edmondson	11.7 ^m	X	282.48607	49.90342	76.98731	2.46366	0.2322619	0.17408100	3.1766434	17	10 25.9	15.9
1762 Russell	11.2	X	21.77120	233.54013	160.63999	2.27930	0.0779688	0.20212239	2.8755865	17	12 15.3	14.8
1763 Williams	12.8	X	297.60561	28.83031	304.46747	4.23517	0.2033968	0.30436441	2.1888036	17	4 15.7	15.9
1764 Cogshall	11.4	X	84.95129	79.71872	152.23272	2.23542	0.1208798	0.18116970	3.0932309	17	8 21.4	15.7
1765 Wrubel	9.92	X	314.42866	265.27869	70.18510	19.94517	0.1768614	0.17429438	3.1740502	17	6 4.7	14.2
1766 Slipher	12.2	X	23.82730	171.67755	188.66465	5.22832	0.0882552	0.21620927	2.7492855	17	11 8.4	15.5
1767 Lampland	12.20	X	201.20601	135.41277	192.21623	9.84182	0.1002057	0.18794313	3.0184576	17	1 29.3	17.0
1768 Appenzella	12.70	X	175.69281	19.71760	12.42360	3.25821	0.1785859	0.25669375	2.4520304	17	3 18.4	16.3
1769 Carlostorres	13.4	X	315.99144	24.44480	319.24596	1.58811	0.1416186	0.30654274	2.1784221	17	6 6.9	15.5
1770 Schlesinger	12.0	X	202.09503	40.20940	21.92363	5.29324	0.0608228	0.25588893	2.4571691	17	5 16.8	15.6
1771 Makover	10.4	X	59.00294	316.67190	86.33451	11.24947	0.1754569	0.17867714	3.1219316	17	—	—
1772 Gagarin	12.6	X	90.34469	93.44258	88.18047	5.74226	0.1051459	0.24540029	2.5266941	17	6 15.1	15.7
1773 Rumpelstilz	11.9	X	317.81240	169.31180	74.77217	5.39920	0.1274405	0.25904899	2.4371454	17	2 2.8	15.2
1774 Kulikov	12.0	X	349.14634	250.62337	175.17900	1.85562	0.0697843	0.20199578	2.8767880	17	12 7.7	15.5
1775 Zimmerwald	12.0	X	148.53842	84.72490	195.93746	12.55493	0.1860566	0.23477206	2.6023864	17	12 28.6	16.6
1776 Kuiper	11.3	X	36.95804	306.29264	176.68482	9.49287	0.0132820	0.18031802	3.1029633	17	1 17.3	15.7
1777 Gehrels	11.6	X	37.59559	131.11727	334.68915	3.14766	0.0170504	0.23164455	2.6257578	17	—	—
1778 Alfvén	11.8	X	182.54442	136.07871	106.23719	2.47380	0.1278560	0.17648642	3.1477134	17	12 9.9	16.8
1779 Parana	14.1	X	344.02094	11.49139	254.43479	0.89867	0.1611818	0.30715796	2.1755123	17	3 20.7	16.2
1780 Kippes	10.68	X	147.83599	340.30938	290.98347	9.00220	0.0539500	0.18812565	3.0165049	17	12 10.9	15.3
1781 Van Biesbroeck	12.8	X	330.78932	342.82559	44.62938	6.94968	0.1082775	0.26594881	2.3948079	17	9 23.0	15.3
1782 Schneller	11.8	X	302.91422	106.77542	157.42216	1.54474	0.1548899	0.17905351	3.1175553	17	2 24.0	16.4
1783 Albitskij	12.0	X	23.41888	315.92804	189.50843	11.50556	0.1315832	0.22682930	2.6627882	17	1 3.9	15.3
1784 Benguella	12.2	X	15.63361	184.76259	95.26911	1.47266	0.1325330	0.26435235	2.4044399	17	6 29.1	14.2
1785 Wurm	12.6	X	301.75102	246.87812	283.31646	3.77291	0.0687053	0.29480680	2.2358589	17	—	—
1786 Raahe	10.9	X	51.17805	348.48093	16.31623	10.43600	0.1116842	0.18788788	3.0190493	17	12 20.3	15.2
1787 Chiny	11.3	X	109.87106	270.42219	307.18846	8.91506	0.0496173	0.18942407	3.0027046	17	8 21.9	15.6
1788 Kiess	11.9	X	323.36737	143.59787	161.90797	0.68159	0.1536710	0.17908981	3.1171340	17	5 13.2	15.9
1789 Dobrovolsky	12.2	X	195.43591	214.93434	102.09320	1.97611	0.1888110	0.29937065	2.2130772	17	—	—
1790 Volkov	12.4	X	45.47027	147.74305	2.00979	5.11031	0.1009227	0.29429223	2.2384644	17	1 27.6	14.4
1791 Patsayev	11.8	X	48.98013	74.43132	198.89090	5.36886	0.1410007	0.21639475	2.7477143	17	8 25.4	15.0
1792 Reni	12.03	X	314.24671	324.34635	72.73179	9.01021	0.2788474	0.21301262	2.7767226	17	8 11.1	15.3
1793 Zoya	12.3	X	321.35457	323.37277	225.99459	1.50876	0.0975385	0.29724466	2.2236171	17	—	—
1794 Finsen	11.08	X	216.88124	340.84487	221.06889	14.58073	0.1508859	0.17780211	3.1321661	17	11 23.9	16.0
1795 Woltjer	12.1	X	160.53465	79.83230	192.15504	7.52784	0.1906705	0.21193975	2.7860854	17	12 26.7	16.9
1796 Riga	9.84	X	142.10684	25.61953	186.73195	22.58460	0.0566910	0.16023756	3.3570656	17	9 23.7	14.9
1797 Schaumasse	12.7	X	92.39011	354.26585	29.67075	3.14165	0.0244430	0.29471589	2.2363186	17	—	—
1798 Watts	12.9	X	136.39263	4.01626	44.26887	6.19409	0.1218619	0.30213067	2.1995787	17	2 5.9	15.4
1799 Koussevitzky	11.3	X	247.38727	192.36269	156.66380	11.48867	0.1182437	0.18685756	3.0301370	17	4 14.5	16.1
1800 Aguilar	12.8	X	189.20114	214.46283	124.24135	5.78934	0.1361140	0.27237277	2.3570037	17	1 16.5	16.3
1801 Titicaca	11.2	X	55.92569	9.46747	77.60325	10.97178	0.0684294	0.18788923	3.0190349	17	—	—
1802 Zhang Heng	11.7	X	310.41837	296.91405	142.57479	2.68934	0.0372261	0.20557270	2.8433201	17	11 2.9	15.5
1803 Zwicky	12.2	X	316.53943	253.93653	337.27444	21.55721	0.2480013	0.27374358	2.3491284	17	—	—
1804 Chebotarev	12.1	X	96.78037	305.46869	325.72490	3.63161	0.0216615	0.26333992	2.4105987	17	10 12.6	15.3
1805 Dirikis	11.4	X	235.41646	86.38923	78.92556	2.51573	0.1114884	0.17702789	3.1412916	17	11 3.5	16.0
1806 Derice	12.1	X	74.05145	193.77520	271.10201	3.84064	0.1063851	0.29457876	2.2370126	17	1 10.4	13.9
1807 Slovakia	12.5	X	283.80400	140.53090	236.34839	3.49187	0.1783596	0.29679227	2.2258762	17	6 6.2	15.2
1808 Bellerophon	12.1	X	141.18864	47.58869	13.16521	2.02982	0.1774489	0.21590492	2.7518686	17	3 25.9	16.2
1809 Prometheus	11.7	X	163.57337	231.33220	99.48368	3.25844	0.1027487	0.19701648	2.9250571	17	—	—
1810 Epimetheus	12.6	X	338.76185	203.69831	254.12142	4.03146	0.0918554	0.29715460	2.2240664	17	—	—
1811 Bruwer	10.9	X	126.00463	137.63755	167.85722	8.51763	0.1081619	0.17736492	3.1373109	17	12 29.8	15.9
1812 Gligamesh	11.5	X	260.44955	262.84923	178.57900	10.27318	0.0837478	0.18914792	3.0056264	17	8 21.9	15.9
1813 Imhotep	11.9	X	141.70754	165.68444	35.12918	8.08801	0.0793277	0.22416142	2.6838741	17	9 15.7	15.9
1814 Bach	12.8	X	257.14417	65.54108	20.31054	4.34684	0.1309629	0.29680263	2.2258243	17	8 19.2	15.6
1815 Beethoven	11.36	X	100.60719	358.77886	110.84445	2.73797	0.1891106	0.17567983	3.1573407	17	4 18.9	15.7
1816 Liberia	11.8	X	292.61213	340.83044	153.35640	26.13488	0.2175764	0.27546479	2.3393327	17	12 9.2	14.8
1817 Katanga	11.0	X	173.16802	140.27344	88.72287	25.70935	0.1915680	0.26987315	2.3715353	17	11 27.0	15.1
1818 Brahms	13.8	X	194.31977	74.55929	249.47827	2.97816	0.1787310	0.30967493	2.1637081	17	—	—
1819 Laputa	10.4	X	151.11899	166.32574	122.11359	23.89876	0.2276955	0.17748015	3.1359529	17	—	—
1820 Lohmann	13.3	X	324.33225	169.03020	145.17514	4.99925	0.2098112	0.30240213	2.1982622	17	4 26.9	15.9
1821 Aconcagua	13.2	X	112.36738	349.78084	297.41648	2.10161	0.2007498	0.26864088	2.3787820	17	12 10.5	17.0
1822 Waterman	13.1	X	45.05198	30.34943	221.25130	0.95666	0.1531149	0.30832579	2.1700154	17	7 12.4	14.6
1823 Gliese	12.6	X	37.70780	296.68440	310.00847	2.89196	0.1353238	0.29684342	2.2256204	17	6 16.5	14.1
1824 Haworth	11.4	X	245.95362	69.94901	15.03392	1.92989	0.0427803	0.20127077	2.8836923	17	8 16.4	15.3
1825 Klare	11.7	X	71.00959	142.56666	288.66988	4.03417	0.1146190	0.22501659	2.6770697	17	—	—
1826 Miller	11.1	X	272.27223	163.28526	274.23373	9.22763	0.0846553	0.19009384	2.9956474	17	8 28.7	15.5
1827 Atkinson	12.39	X	43.64026	239.57949	220.56054	4.52224	0.1774277	0.22094274	2.7098768	17	—	—
1828 Kashirina	11.3	X	138.46592	220.52907	184.61365	14.31235	0.1064526	0.18366616	3.0651374	17	2 27.3	15.8
1829 Dawson	12.5	X	122.90638	142.50706	293.42400	6.33256	0.1202213	0.29168214	2.2517983	17	2 22.6	15.0
1830 Pogson	12.45	X	160.06592	335.16877	147.46202	3.95422	0.0565368	0.30452204	2.1880482	17	6 13.2	15.2
1831 Nicholson	12.5	X	220.11039	183.66969	72.60639	5.63343	0.1278792	0.29417643	2.2390517	17	—	—
1832 Mrkos	11.3	X	86.78220	81.64647	303.42400	14.94671	0.1043807	0.17111643	3.2132283	17	—	—
1833 Shmakova	11.98	X	99.60195	153.96506	158.10596	10.00375	0.1144176	0.23051419	2.6343347	17	12 18.5	16.0
1834 Palach	11.3	X	102.35669	358.39425	268.16296	9.43523	0.0699179	0.18726057	3.0257880	17	10 13.9	15.9
1835 Gajdariya	11.7	X	258.14477	80.74605	296.26059	0.98574	0.0888104	0.20673582	2.8326455	17	5 27.8	15.7
1836 Komarov	12.1	X	351.07208	12.42372	272.74449	7.02125	0.1911542	0.21214036	2.7843288	17	5 19.5	15.0
1837 Osita	12.9	X	93.91272	315.10591	280.93356	3.84554	0.0860643	0.30088196	2.2056602	17	8 30.4	15.5
1838 Ursa	10.8	X	289.72341	51.93369	44.19588	21.96860	0.0153785	0.17082205	3.2169188	17	10 29.3	15.3
1839 Ragazza	12.0	X	276.16085	350.55815	50.89722	10.16637	0.1680074	0.21048913	2.7988713	17	7 10.5	16.2
1840 Hus	11.7	X	56.53205	13.31461	40.52160	2.40884	0.0165593	0				

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1841 Masaryk	10.9 ^m	X	313.50226 ^o	119.95462 ^o	45.32325 ^o	2.62032 ^o	0.0998677 ^o	0.15574887 ^o	3.4212602	17	—	—
1842 Hynek	12.41	X	339.53877	125.54708	153.44722	5.35390	0.1806825	0.28889195	2.2662740	17	4 5.8	14.9
1843 Jarmila	11.8	X	21.16969	32.30895	266.91045	8.41504	0.1688625	0.22804846	2.6532894	17	8 11.9	14.5
1844 Susilva	11.0	X	70.71140	73.56374	99.36475	11.78774	0.0518491	0.18826268	3.0150410	17	5 10.3	15.2
1845 Helewalda	11.2	X	210.23180	325.05213	142.60706	10.71983	0.0567512	0.19269939	2.9685827	17	7 31.6	15.6
1846 Bengt	13.8	X	256.06839	75.08739	19.09195	3.18435	0.1420773	0.27559815	2.3385779	17	8 27.8	16.8
1847 Stobbe	11.1	X	280.41603	140.64044	106.92173	11.13810	0.0212773	0.23371168	2.6102520	17	1 11.6	14.6
1848 Delvaux	11.0	X	138.35454	316.60948	331.66388	1.44046	0.0454746	0.20257597	2.8712925	17	12 22.4	15.3
1849 Kresák	11.5	X	353.12793	143.24988	50.36261	10.76550	0.0174726	0.18465148	3.0542238	17	2 27.7	15.9
1850 Kohoutek	12.8	X	63.53687	190.65064	68.92246	4.05102	0.1257151	0.29187298	2.2508167	17	8 30.4	15.1
1851 Lacroute	12.6	X	85.69034	343.19613	24.76667	1.66600	0.1927390	0.18036765	3.1023940	17	—	—
1852 Carpenter	11.3	X	83.61691	351.02013	95.45108	11.17607	0.0595110	0.18814563	3.0162914	17	2 6.3	15.4
1853 McElroy	10.8	X	106.91597	89.93577	298.77166	15.75869	0.0495839	0.18382316	3.0633920	17	—	—
1854 Skvortsov	12.6	X	341.44181	274.18713	189.24343	4.89865	0.1389688	0.24373612	2.5381821	17	—	—
1855 Korolev	12.8	X	286.80540	349.39903	191.03302	3.07930	0.0840900	0.29255348	2.2473250	17	—	—
1856 Růžena	12.8	X	251.86313	55.99993	185.87802	4.74205	0.0795919	0.29465981	2.2366023	17	—	—
1857 Parchomenko	12.4	X	199.01404	174.04835	236.05475	4.40056	0.1346921	0.29327260	2.2436497	17	4 24.5	15.7
1858 Lobachevskij	11.9	X	98.23749	17.72529	271.90932	1.66070	0.0775927	0.22225703	2.6991833	17	11 13.5	15.5
1859 Kovalevskaya	10.7	X	38.80464	244.92185	343.29734	7.70111	0.0991468	0.17144873	3.2090750	17	6 6.8	14.8
1860 Barbarossa	11.6	X	311.26288	161.93994	132.87941	9.91798	0.2011832	0.23949704	2.5680449	17	3 28.9	15.2
1861 Komenský	11.7	X	83.44208	267.91968	23.58549	10.45619	0.0644028	0.18773683	3.0206685	17	10 24.5	15.8
1862 Apollo	16.25	0.09	255.61737	285.97486	35.63643	6.35536	0.5597590	0.55293579	1.4701204	17	1 27.1	18.8
1863 Antinous	15.54	X	139.55058	268.00448	346.47746	18.39767	0.06063119	0.29020893	2.2594125	17	11 28.2	21.0
1864 Daedalus	14.85	X	23.04916	325.64230	6.63797	22.21053	0.6143799	0.55811933	1.4610038	17	4 6.8	15.8
1865 Cerberus	16.84	X	205.19092	325.25625	212.92845	16.09516	0.4669294	0.87808361	1.0800540	17	10 20.2	16.7
1866 Sisyphus	12.4	X	85.91816	293.09407	63.49810	41.20213	0.5385622	0.37830640	1.8933908	17	—	—
1867 Deiphobus	8.3	X	229.95937	359.19265	283.70560	26.91401	0.0435991	0.08488567	5.1275879	17	1 25.9	15.5
1868 Thersites	9.6	X	261.52763	169.62926	197.83511	16.75229	0.1097173	0.08037173	5.3178226	17	6 1.1	16.9
1869 Philoctetes	11.2	X	247.19377	321.66371	43.98432	3.97454	0.0685647	0.08269440	5.2177747	17	5 18.2	18.2
1870 Glaukos	10.7	X	199.17704	130.21623	176.30046	6.57616	0.0321288	0.08201884	5.2463868	17	1 26.5	17.9
1871 Astyanax	11.2	X	170.07660	162.80718	145.76377	8.59941	0.0331755	0.08198649	5.2477666	17	—	—
1872 Helenos	10.8	X	211.79179	115.34622	188.78870	14.64172	0.0475851	0.08034559	5.3189757	17	2 3.8	18.2
1873 Agenor	10.2	X	304.01413	357.11765	197.92338	21.87948	0.0925490	0.08235077	5.2322796	17	1 6.4	17.4
1874 Kacivelia	11.2	X	243.67082	195.67942	159.12595	4.82527	0.2812862	0.17454500	3.1710112	17	4 8.3	16.7
1875 Neruda	12.3	X	244.69485	138.89693	193.81088	13.39210	0.1650753	0.17708125	3.1406605	17	3 17.6	17.5
1876 Napolitania	15.1	X	45.64152	243.33905	304.48232	23.10964	0.0480737	0.35800518	1.9643092	17	2 22.9	17.3
1877 Marsden	10.9	X	244.80852	306.87389	352.86262	17.55119	0.2075998	0.12584032	3.9438722	17	2 19.8	17.3
1878 Hughes	11.8	X	35.40850	292.74991	187.85727	1.78299	0.0098879	0.20539878	2.8449249	17	1 6.5	15.8
1879 Broederstroom	12.9	X	85.73107	173.95648	249.98233	1.72340	0.1481290	0.29286109	2.2457510	17	—	—
1880 McCrosky	12.0	X	93.79932	188.92623	116.85389	4.85125	0.0762803	0.22528724	2.6749252	17	11 29.9	15.8
1881 Shao	11.4	X	279.09929	66.97902	218.07171	9.86838	0.1065956	0.17470954	3.1690199	17	2 26.2	16.2
1882 Rauma	11.4	X	258.94847	125.11818	201.26060	9.48777	0.0928054	0.18866171	3.0107882	17	3 27.6	16.1
1883 Rimito	12.9	X	346.91671	330.28036	74.78195	25.48012	0.2629690	0.26277510	2.4140517	17	11 25.0	14.3
1884 Skip	12.1	X	306.20939	110.89648	353.63724	21.82695	0.2611850	0.26083480	2.4260087	17	10 24.4	14.7
1885 Herero	13.7	X	161.00800	5.55699	326.41292	5.66794	0.2487447	0.29220605	2.2491060	17	—	—
1886 Lowell	12.1	X	344.53200	217.37493	82.26381	14.87914	0.1563167	0.23144904	2.6272362	17	5 31.8	14.9
1887 Virton	11.0	X	295.93678	32.73278	348.58447	9.62210	0.1144192	0.18927100	3.0043232	17	7 20.4	15.2
1888 Zu Chong–Zhi	11.8	X	310.91069	232.88935	244.85518	5.85942	0.1671658	0.24241058	2.5474265	17	12 16.1	14.1
1889 Pakhmutova	11.1	X	33.15645	84.60602	55.15304	13.18353	0.1116084	0.18144840	3.0900626	17	2 6.4	15.1
1890 Konoshenkova	11.7	X	275.09200	16.35117	70.36772	9.88189	0.1388376	0.17124057	3.2116752	17	9 15.0	16.4
1891 Gondola	12.0	X	299.15237	10.53406	321.87804	11.50653	0.0680309	0.22140763	2.7060823	17	5 18.1	15.9
1892 Lucienne	12.10	X	279.48801	93.02701	315.68179	13.94848	0.0903415	0.25517066	2.4617780	17	8 2.5	15.3
1893 Jakoba	11.8	X	186.53113	242.24683	64.51969	10.04164	0.0558157	0.22132261	2.7067753	17	—	—
1894 Haffner	12.0	X	145.38394	115.43156	257.72961	0.90967	0.0729465	0.20100251	2.8862574	17	1 21.2	16.0
1895 Larink	12.1	X	348.60058	54.05934	45.52897	1.81974	0.1484961	0.17283166	3.1919335	17	—	—
1896 Beer	13.8	X	230.86320	180.15466	182.14872	2.22251	0.2204885	0.27024158	2.3693793	17	3 28.1	17.5
1897 Hind	13.4	X	155.46530	269.03208	63.42307	4.05453	0.1428876	0.28579014	2.2826425	17	—	—
1898 Cowell	12.4	X	124.21468	232.91306	163.30890	1.02788	0.1616412	0.17845515	3.1245201	17	2 10.8	16.8
1899 Crommelin	13.0	X	30.45699	128.39792	52.12830	7.27669	0.1063811	0.28906834	2.2653520	17	2 19.6	15.2
1900 Katyusha	12.2	X	354.19622	142.40166	281.90933	6.54266	0.1348380	0.30008634	2.2095571	17	—	—
1901 Moravia	11.5	X	172.62656	147.31633	94.28629	24.10140	0.0713849	0.16887496	3.2415984	17	12 4.2	16.6
1902 Shaposhnikov	9.51	X	186.17410	268.15582	59.31527	12.49550	0.2218888	0.12482907	3.9651433	17	2 6.8	16.2
1903 Adzhimushkaj	10.6	X	353.79506	352.50568	135.21339	10.96393	0.0448229	0.18950781	3.0018200	17	—	—
1904 Mashevitch	11.2	X	218.92358	261.22457	106.39531	12.81714	0.0721823	0.21660252	2.7459569	17	4 8.7	15.5
1905 Ambartsumian	12.8	X	224.81100	61.58945	201.36868	2.61577	0.1623371	0.29731409	2.2232709	17	—	—
1906 Naef	12.5	X	94.83865	14.48525	354.84153	6.47570	0.1354093	0.26961001	2.3730781	17	—	—
1907 Rudneva	12.0	X	181.05344	59.09582	152.06989	3.21981	0.0423180	0.24256344	2.5463562	17	11 10.6	15.6
1908 Pobeda	11.1	X	185.07676	223.24971	14.34909	4.76169	0.0348526	0.20038754	2.8921595	17	12 12.7	15.4
1909 Alekhin	12.8	X	53.88231	5.64048	227.45630	1.79551	0.2256909	0.26139013	2.4225714	17	7 17.8	14.8
1910 Mikhailov	11.4	X	30.14655	329.91050	200.85643	10.36632	0.0522388	0.18523763	3.0477774	17	3 5.3	15.6
1911 Schubart	10.11	X	136.84405	181.74515	284.83730	1.64308	0.1697486	0.12430797	3.9762169	17	5 26.2	16.3
1912 Anubis	11.8	X	154.96987	317.02548	76.22271	3.15761	0.0920283	0.19894551	2.9061837	17	3 1.9	16.0
1913 Sekanina	11.6	X	55.37979	34.61238	358.52157	1.56617	0.0783510	0.20180164	2.8786123	17	—	—
1914 Hartbeespoortdam	12.0	X	163.42908	159.18808	120.69899	5.68170	0.1471490	0.26410883	2.4059177	17	—	—
1915 Quetzálcoatl	18.97	0.10	12.49676	347.88330	162.95107	20.40173	0.5704833	0.24286022	2.5442813	17	—	—
1916 Boreas	14.93	X	252.12512	335.83438	340.64275	12.88381	0.4496835	0.28770623	2.2724964	17	2 12.9	19.6
1917 Cuyo	13.9	X	301.66203	194.54166	188.31484	23.96171	0.5056143	0.31283245	2.1491242	17	5 24.6	17.9
1918 Aiguillon	11.7	X	145.64251	245.30246	195.12309	9.19610	0.1309355	0.17269429	3.1936260	17	4 26.1	16.6
1919 Clemence	13.45	X	286.44153	99.88056	356.99538	19.33713	0.0949678	0.36585962	1.9360938	17		

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
1921 Pala	14.7 ^m	X	165.03546	20.09197	352.30670	19.19220	0.3890326	0.16458012	3.2977505	17	3 11.7	20.7
1922 Zulu	12.3	X	221.75902	31.40403	226.53338	35.44871	0.4818321	0.16935604	3.2354567	17	12 28.6	18.8
1923 Osiris	13.6	X	269.38163	106.03877	353.07408	4.95799	0.0633698	0.25929235	2.4356203	17	9 30.8	16.7
1924 Horus	13.4	X	203.61833	152.36438	350.27158	2.72946	0.1310841	0.27538578	2.3397801	17	9 3.7	17.0
1925 Franklin-Adams	12.1	X	129.87991	242.08187	113.52867	7.73301	0.1770454	0.24190753	2.5509569	17	—	—
1926 Demiddeleer	11.1	X	29.92258	91.60972	93.42799	13.71904	0.1096653	0.22764896	2.6563926	17	3 21.5	14.4
1927 Suvanto	11.9	X	352.49448	95.87502	27.14559	13.37153	0.1463808	0.22832204	2.6511695	17	—	—
1928 Summa	12.68	X	98.00340	157.79950	180.41989	4.57561	0.2032032	0.25289835	2.4765022	17	—	—
1929 Kollaa	12.6	X	226.59695	71.22049	65.42923	7.77976	0.0747883	0.27135270	2.3629069	17	9 30.2	15.8
1930 Lucifer	11.0	X	334.69964	341.36627	318.53306	14.05693	0.1414008	0.19977600	2.8980587	17	5 17.1	14.8
1931 Čapek	13.0	X	297.93931	164.55118	182.43394	8.26228	0.2714806	0.24330326	2.5411917	17	5 8.6	16.7
1932 Jansky	13.7	X	120.39857	303.56667	188.99692	1.89083	0.1591563	0.26990321	2.3713593	17	5 24.6	16.8
1933 Titchen	13.0	X	315.04011	214.52168	164.92587	6.88221	0.1236787	0.27311862	2.3527106	17	8 5.8	15.4
1934 Jeffers	12.4	X	68.68178	294.72130	86.52188	23.14547	0.3005936	0.26684354	2.3894517	17	—	—
1935 Lucerna	13.0	X	87.22969	198.61842	200.20212	9.56777	0.2292766	0.23172784	2.6251286	17	—	—
1936 Lugano	11.8	X	291.44445	255.13413	265.16772	10.25444	0.1357134	0.22511189	2.6763142	17	—	—
1937 Locarno	11.7	X	96.20986	226.42561	78.95974	12.45682	0.1559185	0.26877782	2.3779740	17	12 14.1	15.0
1938 Lausanna	12.7	X	329.16823	64.83019	171.68819	3.33429	0.1596640	0.29464733	2.2366655	17	1 21.3	15.6
1939 Loretta	11.1	X	24.96792	189.35640	40.47220	0.90585	0.1259212	0.17865114	3.1222345	17	5 17.8	14.5
1940 Whipple	11.1	X	18.58267	179.82266	263.79889	6.55874	0.0637088	0.18407416	3.0606065	17	—	—
1941 Wild	11.8	X	288.25114	302.69596	60.45374	3.95871	0.2886034	0.12545150	3.9520171	17	5 27.9	17.5
1942 Jablunka	13.0	X	267.15473	11.97815	346.35910	24.34191	0.1840673	0.27916094	2.3186380	17	4 12.1	17.0
1943 Anteros	15.75	X	332.16765	338.36610	246.33340	8.70612	0.2560827	0.57607916	1.4304783	17	—	—
1944 Günter	13.8	X	166.20124	124.81836	212.44007	5.48918	0.2373148	0.29410582	2.2394101	17	—	—
1945 Wesselink	12.7	X	96.27422	194.69092	142.62597	4.22589	0.1814041	0.24158531	2.5532247	17	—	—
1946 Walraven	12.0	X	242.32152	340.01141	17.26931	8.16059	0.2345807	0.28354908	2.2946541	17	3 29.8	15.7
1947 Iso-Heikkilä	11.4	X	198.81659	144.06201	90.90742	11.91182	0.0371665	0.17596481	3.1539309	17	12 22.4	16.1
1948 Kampala	12.8	X	160.10622	179.29331	23.28264	5.82782	0.1688179	0.24428720	2.5343635	17	10 7.9	16.8
1949 Messina	13.3	X	344.58227	66.50307	264.99628	4.65370	0.2288496	0.26783687	2.3835402	17	7 2.9	15.1
1950 Wempe	13.2	X	222.87284	52.94265	69.94106	4.22270	0.0842571	0.30651163	2.1785695	17	9 3.9	16.1
1951 Lick	14.1	X	221.31827	140.52084	130.75050	39.09148	0.0615540	0.60113955	1.3904408	17	—	—
1952 Hesburgh	10.32	X	175.77101	339.27182	78.14912	14.25523	0.1416468	0.17957658	3.1114984	17	5 1.3	15.4
1953 Rupertwildt	11.9	X	347.06068	326.88295	74.26950	2.45916	0.1826604	0.17973922	3.1096212	17	10 31.3	15.2
1954 Kukarkin	11.3	X	324.18062	70.42679	278.02182	14.79426	0.3127576	0.19591597	2.9360008	17	6 12.9	14.8
1955 McMath	12.1	X	32.25697	154.10262	258.10970	1.00529	0.0645385	0.20436206	2.8545382	17	—	—
1956 Artek	12.1	X	11.87751	346.59903	153.36255	1.49274	0.1021550	0.17192150	3.2031892	17	1 3.8	16.2
1957 Angara	11.36	X	345.36381	209.02583	50.70214	11.19074	0.0580047	0.18889690	3.0082886	17	4 27.8	15.2
1958 Chandra	11.2	X	233.69307	318.94780	345.03711	10.55900	0.1672535	0.18031142	3.1030390	17	2 6.5	16.3
1959 Karbyshev	12.8	X	282.13962	31.85610	285.03200	6.19958	0.1333051	0.27955179	2.3164763	17	3 18.2	16.1
1960 Guisan	11.93	X	74.21213	263.99301	22.21291	8.47375	0.1220277	0.24538179	2.5268211	17	10 18.6	15.1
1961 Dufour	10.7	X	187.01308	57.01482	29.58064	6.64974	0.1242457	0.17287718	3.1913732	17	6 10.9	15.8
1962 Dunant	12.1	X	260.03863	11.18953	15.27517	1.55315	0.2388768	0.17383383	3.1796539	17	5 29.8	17.2
1963 Bezovec	10.91	X	145.67442	355.67907	106.87688	25.05311	0.2107762	0.26153472	2.4216785	17	5 27.9	15.0
1964 Luyten	13.4	X	228.58190	163.87448	238.44584	2.38981	0.1958138	0.25464188	2.4651849	17	5 17.5	17.2
1965 van de Kamp	12.0	X	246.98905	343.42027	88.19557	2.22003	0.1068896	0.23952315	2.5678583	17	7 21.5	15.6
1966 Tristan	14.2	X	134.78841	59.39059	125.65107	2.48276	0.0897301	0.25736993	2.4477338	17	8 15.2	17.4
1967 Menzel	12.1	X	183.67458	347.82644	57.80122	3.90082	0.1387630	0.29523133	2.2337149	17	4 4.6	15.3
1968 Mehlretter	11.7	X	234.21161	164.93605	71.49791	4.59540	0.1114055	0.21740774	2.7391725	17	—	—
1969 Alain	11.9	X	21.49907	347.21469	209.18487	3.33891	0.1587007	0.18147399	3.0897721	17	3 25.4	15.4
1970 Sumeria	12.3	X	271.12006	192.82199	312.40760	7.06670	0.1580944	0.21245553	2.7815744	17	11 13.9	16.1
1971 Hagihara	12.3	X	294.30707	120.49957	300.12432	8.69904	0.0853704	0.19039998	2.9924354	17	9 5.7	16.4
1972 Yi Xing	13.38	0.21	0.92004	32.62172	46.55848	4.12624	0.1663391	0.26187726	2.4195663	17	—	—
1973 Colocolo	12.3	X	210.65780	162.32817	183.22283	10.59569	0.0799539	0.17328047	3.1864197	17	3 4.0	17.2
1974 Caupolican	13.1	X	302.38910	90.66010	168.34496	10.22445	0.0992448	0.17495831	3.1660152	17	2 24.7	17.7
1975 Pikelner	12.0	X	65.94654	185.42370	170.26310	6.30774	0.1184875	0.21020594	2.8013845	17	12 31.4	16.0
1976 Kaverin	13.3	X	321.12923	119.66292	90.92844	2.37151	0.0747817	0.26827743	2.3809300	17	—	—
1977 Shura	11.5	X	120.98653	310.43605	332.25889	7.76437	0.0730472	0.21248123	2.7813501	17	11 27.8	15.7
1978 Patrice	12.9	X	31.61739	268.85718	54.28755	4.34392	0.2137860	0.30319316	2.1944370	17	10 26.2	14.5
1979 Sakharov	13.6	X	157.42470	221.15140	202.65360	6.04796	0.1001510	0.26934221	2.3746509	17	3 28.3	16.6
1980 Tezcatlipoca	13.92	X	328.59570	115.48587	246.57431	26.86937	0.3648145	0.44098222	1.7094458	17	5 25.8	15.4
1981 Midas	15.2	X	256.48051	267.79630	356.89825	39.83300	0.6502366	0.41645132	1.7759329	17	—	—
1982 Cline	12.9	X	18.92447	279.56754	42.36575	6.84214	0.2490361	0.28064896	2.3104350	17	9 30.8	14.3
1983 Bok	13.0	X	260.33466	346.77560	23.55707	9.41333	0.0984987	0.23222016	2.6214170	17	5 15.5	16.9
1984 Fedynskij	11.2	X	199.04516	127.72933	185.71093	4.79346	0.0900348	0.18877578	3.0095752	17	1 11.7	15.9
1985 Hopmann	10.9	X	334.27102	234.25187	305.15411	17.15875	0.1539867	0.17871983	3.1214345	17	—	—
1986 Plaut	12.0	X	13.80112	230.35079	146.56627	2.21275	0.2040127	0.18130030	3.0917452	17	11 21.9	15.4
1987 Kaplan	11.5	X	238.96606	38.17624	314.23098	23.64513	0.2268903	0.26795966	2.3828119	17	3 10.6	16.0
1988 Delores	13.6	X	226.96778	235.00571	106.37830	4.25191	0.1024273	0.31171172	2.1542725	17	2 19.4	16.4
1989 Tatry	12.5	X	166.58658	88.34336	25.30536	7.76546	0.0767929	0.27343719	2.3508829	17	6 12.6	15.8
1990 Pilcher	13.14	X	31.22514	12.11499	193.63154	3.13197	0.0513298	0.30744105	2.1741766	17	3 25.5	15.3
1991 Darwin	13.4	X	278.54360	345.52324	328.45353	5.91479	0.2073412	0.29217099	2.2492859	17	3 4.8	16.9
1992 Galvarino	12.7	X	197.49303	98.24120	182.58725	10.56991	0.0484545	0.19046594	2.9917445	17	—	—
1993 Guacolda	13.0	X	56.68361	156.92583	158.03067	11.47731	0.0646249	0.18408863	3.0604462	17	10 24.0	17.3
1994 Shane	12.2	X	298.86605	89.66851	244.72650	10.21703	0.2061082	0.22456446	2.6806618	17	5 1.5	16.0
1995 Hajek	13.3	X	6.15739	134.65404	47.23160	10.82494	0.0546704	0.24500582	2.5294054	17	2 3.3	16.6
1996 Adams	11.6	X	259.96831	355.04779	1.09227	15.13169	0.1380378	0.24075565	2.5590871	17	4 18.8	15.6
1997 Leverrier	13.3	X	153.46297	0.64590	353.21720	6.06898	0.2068624	0.30019852	2.2090066	17	—	—
1998 Titius	12.2	X	335.11033	246.70150	351.77960	7.62652	0.0642183	0.26186401	2.4196479	17	2 26.3	15.0
1999 Hirayama	11.0	X	39.37060	357.05065	148.03236	12.52881	0.1152227	0.17913275	3.1166358	17	2 19.1	14.6
2000 Herschel	11.25	X	132.82250	130.33210	292.00141	22.79077	0.2970316	0.26819207				

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2001 Einstein	12.85	X	150.59359	217.74241	357.08379	22.68297	0.0985554	0.36656873	1.9335961	17	10 9.0	15.4
2002 Euler	12.4	X	0.32742	53.29383	178.64991	8.50153	0.0689170	0.26216795	2.4177774	17	3 24.8	15.1
2003 Harding	12.0	X	98.13785	70.69760	64.47361	1.86934	0.1267121	0.18412951	3.0599931	17	5 6.4	16.2
2004 Lexell	12.7	X	215.94132	58.50353	4.54404	2.49675	0.0797547	0.30793641	2.1718443	17	5 28.9	15.4
2005 Hencke	12.2	X	91.08747	110.87163	291.09470	12.21968	0.1671901	0.23230325	2.6207918	17	—	—
2006 Polonskaya	12.9	X	134.28402	24.34777	0.98237	4.91786	0.1928299	0.27807382	2.3246772	17	1 19.6	15.5
2007 McCuskey	12.1	X	47.38374	185.24760	17.04282	3.04200	0.1151624	0.26776989	2.3839377	17	4 28.7	14.2
2008 Konstitutsiya	10.1	X	35.50525	201.79494	15.61934	20.66696	0.0978705	0.17104881	3.2140750	17	5 11.8	14.4
2009 Voloshina	11.2	X	261.35905	6.20396	107.55250	2.86085	0.1423264	0.17919071	3.1159637	17	9 27.9	15.7
2010 Chebyshev	11.62	X	271.09160	33.20775	8.55144	2.39713	0.1893581	0.18155550	3.0888473	17	7 3.7	16.3
2011 Veteraniya	13.0	X	282.05235	3.74559	338.52313	6.17889	0.1484695	0.26724686	2.3870470	17	4 22.1	16.5
2012 Guo Shou–Jing	13.3	X	6.72521	36.69488	277.10793	2.90664	0.1781821	0.27736309	2.3286467	17	8 2.2	14.9
2013 Tucapel	11.8	X	130.64216	238.11975	96.54447	7.50363	0.2262669	0.28452390	2.2894098	17	—	—
2014 Vasilevskis	12.3	X	295.49839	82.81907	204.09490	21.37615	0.2867065	0.26473541	2.4021200	17	2 8.1	16.7
2015 Kachuevskaya	12.2	X	291.39568	274.48626	344.49654	11.91151	0.1042396	0.27611885	2.3356370	17	1 22.8	15.6
2016 Heinemann	11.8	X	72.56951	340.98519	16.98687	0.91915	0.1916722	0.17804919	3.1292677	17	—	—
2017 Wesson	12.78	X	290.03962	136.28185	171.31387	4.86046	0.1857878	0.29154981	2.2524797	17	3 10.6	15.9
2018 Schuster	14.3	X	249.01997	157.75718	186.07783	2.55940	0.1918577	0.30537675	2.1839636	17	3 15.6	17.8
2019 van Albada	12.3	X	221.80880	24.94868	252.20154	4.04351	0.1654533	0.29381876	2.2408685	17	—	—
2020 Ukko	11.2	X	235.49532	329.63683	148.84723	11.13988	0.0685280	0.18761920	3.0219309	17	9 13.7	15.7
2021 Poincaré	13.4	X	18.11868	164.39153	155.00247	5.48894	0.2187202	0.28077929	2.3097200	17	9 17.1	14.7
2022 West	11.6	X	61.73245	37.06345	2.50765	5.65941	0.1187930	0.22148775	2.7054297	17	—	—
2023 Asaph	11.6	X	98.69746	357.53102	3.12900	22.35185	0.2801282	0.20208172	2.8759723	17	—	—
2024 McLaughlin	12.9	X	126.79221	291.34339	69.23108	7.31170	0.1389216	0.27803727	2.3248809	17	—	—
2025 Nortia	10.6	X	131.70305	310.01312	329.05732	7.02043	0.1118867	0.17499952	3.1655182	17	12 4.3	15.6
2026 Cottrell	13.0	X	135.20664	211.66533	311.10448	2.45098	0.1155118	0.25757653	2.4464247	17	7 18.9	16.3
2027 Shen Guo	11.3	X	32.19059	353.29880	55.23562	11.03046	0.0983705	0.18776393	3.0203779	17	—	—
2028 Janequeo	14.7	X	70.12809	27.57385	242.79793	7.95578	0.1125076	0.28318978	2.2965945	17	9 16.9	17.5
2029 Binomi	13.0	X	120.74795	67.21701	178.03178	5.58684	0.1284872	0.27365648	2.3496269	17	—	—
2030 Belyaev	13.4	X	227.41125	61.96596	169.08009	2.58199	0.0933876	0.29257372	2.2472213	17	—	—
2031 BAM	12.9	X	124.02128	213.58494	169.28079	4.75241	0.1729379	0.29517615	2.2339933	17	—	—
2032 Ethel	11.4	X	269.93611	295.71119	30.17801	1.50971	0.1266841	0.18302339	3.0723097	17	4 6.4	16.1
2033 Basilea	12.9	X	191.60221	134.55625	321.72437	8.46341	0.1116747	0.29697453	2.2249653	17	6 18.6	16.1
2034 Bernoulli	12.5	X	149.49696	64.13789	19.05511	8.55410	0.1804875	0.29277510	2.2461907	17	4 19.7	15.5
2035 Stearns	12.61	X	57.88137	200.68895	77.03761	27.75025	0.1313248	0.38111688	1.8840710	17	10 12.4	15.2
2036 Sheragul	12.8	X	84.00450	306.34940	346.25596	3.97243	0.1849909	0.29303428	2.2448661	17	11 19.1	15.9
2037 Tripaxetialis	13.2	X	235.92810	346.17914	9.50197	4.25096	0.1314042	0.28218026	2.3020688	17	3 24.1	16.6
2038 Bistro	11.9	X	5.04031	183.68738	73.47512	14.80929	0.0907230	0.25943255	2.4347427	17	5 10.3	14.6
2039 Payne–Gaposchkin	12.6	X	257.60987	41.99843	95.86525	2.52515	0.1331348	0.17387306	3.1791756	17	10 23.6	17.3
2040 Chalonge	11.4	X	9.17201	89.78156	38.78876	14.67131	0.1841623	0.17904257	3.1176822	17	—	—
2041 Lancelot	12.5	X	28.85205	274.21263	134.07458	2.98067	0.1993237	0.17586946	3.1550707	17	—	—
2042 Sitarski	12.7	X	112.50962	55.51511	17.22839	5.32714	0.1490777	0.21540774	2.7561014	17	3 4.8	16.3
2043 Ortutay	10.7	X	282.90488	60.33371	321.21446	3.07449	0.1112287	0.18008944	3.1055883	17	7 2.5	15.1
2044 Wirt	13.1	X	53.28640	50.47358	53.64572	23.97030	0.3434325	0.26823954	2.3811542	17	—	—
2045 Peking	12.1	X	314.71510	198.32555	11.11781	6.90896	0.0555720	0.26847728	2.3797483	17	—	—
2046 Leningrad	11.4	X	288.84625	284.25825	73.56944	2.73561	0.1794032	0.17575385	3.1564542	17	5 31.1	15.9
2047 Smetana	13.9	X	16.21254	307.99285	36.61129	25.28133	0.0033402	0.38480743	1.8720054	17	10 15.5	15.7
2048 Dwornik	13.50	X	96.94393	105.56587	157.64458	23.75097	0.0422796	0.36092542	1.9536994	17	10 17.6	16.0
2049 Grietje	15.0	X	82.04652	141.89688	200.08486	24.42406	0.0844003	0.36220431	1.9490978	17	—	—
2050 Francis	12.68	X	67.82603	170.92548	72.49421	26.60678	0.2381088	0.27805928	2.3247582	17	9 18.1	16.3
2051 Chang	11.6	X	193.18872	174.65658	215.05563	1.35455	0.0748468	0.20549115	2.8440723	17	4 3.4	15.9
2052 Tmrikio	10.48	X	340.24914	204.82084	213.85953	9.50086	0.0847622	0.18894292	3.0078000	17	11 14.2	14.1
2053 Nuki	11.8	X	280.95242	238.07936	193.18719	8.50598	0.1441758	0.21026495	2.8008604	17	8 25.1	15.6
2054 Gawain	12.5	X	315.28226	183.96662	293.24163	3.78866	0.0990636	0.19301689	2.9653265	17	12 19.9	16.2
2055 Dvořák	12.7	X	101.49249	244.12452	340.44461	21.48784	0.3113878	0.28067224	2.3103073	17	9 18.6	16.4
2056 Nancy	12.3	X	244.12258	145.71498	225.77007	3.93584	0.1386974	0.29838027	2.2179716	17	4 18.7	15.4
2057 Rosemary	12.5	X	108.14169	17.81252	15.35437	1.43845	0.2339587	0.18243904	3.0788665	17	1 28.7	16.5
2058 Róka	11.4	X	17.33305	180.50276	95.32781	2.53515	0.1547954	0.17853443	3.1235951	17	7 7.3	14.7
2059 Baboquivari	15.9	X	176.47523	191.72790	200.92335	11.07597	0.5301781	0.22821657	2.6519862	17	4 8.6	21.3
2060 Chiron	6.0	X	153.57906	339.67693	209.20064	6.94972	0.3822543	0.01954746	13.6482145	17	9 17.6	18.7
2061 Anza	16.56	X	251.57430	156.95351	207.40713	3.79695	0.5357542	0.28865247	2.2675273	17	4 3.7	21.5
2062 Aten	16.80	X	162.58969	147.98426	108.55847	18.93292	0.1827831	0.03685704	0.9667707	17	—	—
2063 Bacchus	17.3	X	113.13483	55.31523	33.10339	9.43307	0.3493596	0.88067752	1.0779322	17	—	—
2064 Thomsen	12.5	X	142.29546	2.74745	302.15668	5.69458	0.3297609	0.30656147	2.1783333	17	—	—
2065 Spicer	12.4	X	350.70148	66.38116	328.09523	6.43478	0.2344589	0.22233447	2.6985565	17	10 31.6	14.7
2066 Palala	12.7	X	194.42828	109.58732	117.21409	3.75335	0.1278958	0.26606113	2.3941338	17	12 11.3	16.3
2067 Aksnes	10.48	X	191.29359	297.32586	150.24086	3.07983	0.1815764	0.12489923	3.9636583	17	6 20.3	16.8
2068 Dangreen	11.2	X	87.48400	319.37790	95.99885	12.89315	0.0980661	0.21359379	2.7716835	17	—	—
2069 Hubble	11.3	X	81.95071	70.18543	46.40580	9.10638	0.1859602	0.17540719	3.1606115	17	4 3.7	15.3
2070 Humason	13.3	X	262.08766	350.21957	1.52504	2.75283	0.1544749	0.29198845	2.2502232	17	4 10.6	16.5
2071 Nadezhda	13.3	X	239.65854	0.94291	302.22834	3.63581	0.1577652	0.29167164	2.2518524	17	1 18.2	16.5
2072 Kosmodemyanskaya	12.61	X	113.24793	38.42617	26.19995	4.74193	0.1632671	0.25685380	2.4510117	17	2 14.3	15.4
2073 Janáček	12.7	X	318.86260	359.99000	85.02953	2.96364	0.1127844	0.22015367	2.7163482	17	11 16.7	15.7
2074 Shoemaker	13.9	X	243.44066	205.57581	207.29258	30.08004	0.0820042	0.40825216	1.7996321	17	6 4.5	16.5
2075 Martinez	12.7	X	139.60166	354.98183	112.18827	27.08489	0.2500766	0.26480107	2.4017229	17	5 31.9	16.9
2076 Levin	14.2	X	181.02872	75.25302	328.90033	4.98790	0.1518282	0.28739472	2.2741382	17	3 29.5	17.5
2077 Kiangsu	13.6	X	20.60429	343.89906	69.48987	28.11067	0.2965598	0.27770467	2.3267368	17	—	—
2078 Nanking	13.0	X	285.81182	99.56082	286.97281	20.16599	0.3748313	0.27040017	2.3684529	17	5 31.4	17.1
2079 Jacchia	12.6	X	346.20052	145.37153	353.07865	13.26175	0.0773392	0.23523938	2.5989387	17	—	—
2080 Jihlava	12.9	X	48.47766	51.24697	23.84857	3.85116	0.0607126	0.306951				

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2081 Sázava	12.14 ^m	X	179.84358	223.89798	66.34030	3.90378	0.1626338	0.25684516	2.4510667	17	—	—
2082 Galahad	12.9	X	253.91639	145.35830	90.05647	3.06843	0.1669711	0.19771506	2.9181630	17	—	—
2083 Smither	13.27	X	333.62630	228.77371	259.18766	18.45300	0.0510873	0.38481082	1.8719943	17	—	—
2084 Okayama	12.2	X	190.37812	248.39979	148.98336	4.83844	0.1022160	0.26572378	2.3961597	17	4 3.4	15.6
2085 Henan	11.8	X	276.33646	294.54105	118.14229	3.83432	0.0863083	0.22236238	2.6983307	17	8 5.3	15.2
2086 Newell	12.3	X	353.21033	295.39746	135.20356	6.48105	0.1115338	0.26481822	2.4016191	17	—	—
2087 Kochera	13.0	X	290.17890	319.95592	95.62790	1.82889	0.0582508	0.30083927	2.2058689	17	9 1.8	15.4
2088 Sahlia	12.42	X	296.34912	90.86881	359.76339	5.54002	0.0793245	0.30055177	2.2072754	17	10 28.4	14.7
2089 Cetacea	10.98	X	316.60125	287.19275	102.69434	15.37694	0.1562199	0.24433399	2.5340400	17	8 26.4	14.0
2090 Mizuho	10.99	X	337.47350	341.19942	339.84531	11.81357	0.1331744	0.18298811	3.0727046	17	6 29.1	14.9
2091 Sampo	10.4	X	359.60754	318.83964	114.53077	11.37784	0.0611259	0.18833641	3.0142540	17	12 29.6	14.4
2092 Sumiana	11.9	X	100.91864	211.95075	72.34581	3.07551	0.0277484	0.20494121	2.8491579	17	11 3.6	15.7
2093 Genichesk	12.9	X	175.61882	118.21176	154.85754	6.09139	0.1681190	0.28832641	2.2692365	17	—	—
2094 Magnitka	12.0	X	149.03005	251.57629	281.93296	5.02893	0.0964105	0.29552507	2.2322346	17	8 14.0	15.1
2095 Parsifal	12.7	X	113.60227	10.90213	332.34443	3.58500	0.0114516	0.22963509	2.6410536	17	—	—
2096 Väinö	13.6	X	160.33225	38.53134	304.90966	0.99254	0.2348720	0.25806075	2.4433635	17	1 6.9	17.2
2097 Galle	11.9	X	198.14640	28.83962	319.43167	4.37181	0.2561753	0.17764948	3.1339598	17	2 26.8	17.3
2098 Zyskin	12.4	X	338.13532	354.47723	337.74161	6.49559	0.1266551	0.26121806	2.4236352	17	7 8.4	14.9
2099 Opik	15.18	X	148.76125	159.18181	218.84059	26.96601	0.3615585	0.28182547	2.3040004	17	2 8.3	19.3
2100 Ra-Shalom	16.05	0.12	313.07948	356.06000	170.81924	15.75353	0.4365449	1.29862826	0.8320437	17	—	—
2101 Adonis	18.8	X	311.98425	43.47240	349.62884	1.32565	0.7647907	0.38428936	1.8736874	17	5 14.5	22.6
2102 Tantalus	16.0	X	129.37748	61.54851	94.36528	64.00400	0.2991528	0.67259465	1.2901309	17	6 24.4	15.6
2103 Laverna	10.9	X	87.90328	238.25179	292.05614	7.69457	0.1928708	0.17704222	3.1411221	17	6 17.9	15.2
2104 Toronto	9.8	X	359.44527	291.77548	252.48206	18.37944	0.1208202	0.17313046	3.1882599	17	1 30.6	14.2
2105 Gudy	11.3	X	176.57082	156.21342	273.60399	29.34721	0.1504529	0.26700211	2.3885055	17	4 26.4	15.6
2106 Hugo	12.3	X	67.06865	248.32891	151.96560	8.03080	0.0971873	0.22182988	2.7026471	17	—	—
2107 Ilmari	11.4	X	293.95523	178.17547	221.23445	8.82782	0.0785432	0.23154806	2.6264872	17	8 8.3	15.0
2108 Otto Schmidt	12.1	X	42.13010	64.18722	327.95854	10.79653	0.0052607	0.25918527	2.4362911	17	—	—
2109 Dhotel	11.91	X	68.69179	192.41278	162.15500	8.07509	0.2612986	0.22333345	2.6905033	17	—	—
2110 Moore-Sitterly	13.3	X	332.37661	192.74077	140.46252	1.13080	0.1771671	0.30247849	2.1978922	17	6 13.4	15.3
2111 Tselina	10.45	X	318.00371	232.53965	167.17232	10.50343	0.0951721	0.18808000	3.0169930	17	9 15.4	14.1
2112 Ulyanov	12.3	X	40.90344	156.11283	243.69185	3.37246	0.1377932	0.29132704	2.2536278	17	—	—
2113 Ehrdni	13.17	X	198.19199	348.09317	23.38074	6.43460	0.0961117	0.25315782	2.4748097	17	3 11.8	16.7
2114 Wallenquist	11.8	X	91.27122	216.98072	1.55193	0.55587	0.1413265	0.17227976	3.1987469	17	8 15.5	16.2
2115 Irakli	11.0	X	188.80620	338.66382	241.42541	8.97662	0.0503469	0.18847441	3.0127826	17	11 24.4	15.3
2116 Mtskheta	12.3	X	45.79725	175.82447	170.63781	9.08281	0.0593613	0.23661902	2.5888265	17	11 21.0	15.7
2117 Danmark	11.8	X	299.31254	264.34772	59.49538	2.93263	0.0668244	0.20266117	2.8704877	17	5 13.4	15.7
2118 Flugstaff	11.7	X	127.35615	101.14438	331.41399	6.29853	0.2190728	0.24215976	2.5491852	17	3 23.8	15.3
2119 Schwall	13.3	X	309.26308	19.78123	268.20112	3.83698	0.1567941	0.29173402	2.2515314	17	3 6.9	16.5
2120 Tyumenia	11.0	X	162.29068	75.50891	222.45827	17.57311	0.1276973	0.18423817	3.0587899	17	—	—
2121 Sevastopol	12.2	X	94.88881	160.37680	145.71527	4.37798	0.1782776	0.30540978	2.1838062	17	12 19.8	15.4
2122 Pyatiletka	12.0	X	197.74292	236.46610	105.49928	7.89806	0.0295246	0.26476450	2.4019440	17	1 23.1	15.1
2123 Vltava	11.5	X	11.86169	58.84794	311.61804	1.01062	0.0709084	0.20378203	2.8599523	17	10 31.1	15.1
2124 Nissen	11.8	X	61.61097	258.32969	46.87630	10.69939	0.0918208	0.18732312	3.0251143	17	10 21.2	15.9
2125 Karl-Öntjes	11.9	X	114.77768	16.86402	315.58018	1.68950	0.1089858	0.21202013	2.7853813	17	—	—
2126 Gerasimovich	12.7	X	229.48207	70.18146	326.61777	8.47571	0.1205849	0.26680352	2.3896906	17	5 10.7	16.4
2127 Tanya	11.0	X	343.14291	185.53934	106.39012	13.09392	0.0319148	0.17137065	3.2100496	17	6 10.5	15.4
2128 Wetherill	14.2	X	271.93872	331.98700	358.46559	16.88413	0.3787629	0.21743308	2.7389597	17	3 19.3	19.0
2129 Cosicosi	14.6	X	222.98128	318.48475	58.48655	5.51825	0.1730928	0.30590748	2.1814369	17	4 6.3	18.0
2130 Evdokiya	13.2	X	278.53383	327.01426	350.06061	5.61345	0.1884728	0.29137292	2.2533912	17	3 11.2	16.5
2131 Mayall	12.72	X	78.04543	38.55201	306.04880	33.98715	0.1111491	0.38014737	1.8872730	17	—	—
2132 Zhukov	11.4	X	341.27544	337.30462	82.44491	5.86811	0.0830785	0.21254592	2.7807858	17	11 20.1	14.7
2133 Franceswright	13.2	X	5.98319	280.55115	78.35801	6.90280	0.1847125	0.26335102	2.4105310	17	10 21.8	15.2
2134 Dennispalm	13.1	X	161.21534	120.22420	11.60551	31.36694	0.2564639	0.23038989	2.6352821	17	7 28.8	18.3
2135 Aristaeus	17.94	X	15.75430	290.87841	191.21748	23.06174	0.5028649	0.48717006	1.5996157	17	—	—
2136 Jugta	11.3	X	115.89109	55.56076	148.95718	10.59561	0.0445844	0.18779097	3.0200879	17	8 13.5	15.7
2137 Priscilla	11.1	X	346.72040	136.93287	319.79697	11.66224	0.0527313	0.17321710	3.1871967	17	—	—
2138 Swissair	11.5	X	8.12512	168.77078	105.63557	5.92517	0.0653426	0.22390137	2.6859518	17	6 14.1	14.8
2139 Makharadze	12.80	X	54.79075	67.56056	256.16436	2.18010	0.1877671	0.25514633	2.4619345	17	11 22.7	15.9
2140 Kemerovo	11.3	X	334.71381	119.69278	274.74863	6.98510	0.0582254	0.19085369	2.9876909	17	10 2.5	15.4
2141 Simferopol	11.5	X	32.83877	57.36733	271.69779	5.93791	0.1295167	0.20986557	2.8044127	17	10 12.0	15.0
2142 Landau	12.0	X	27.35805	33.49642	155.53561	0.66428	0.1176587	0.17481278	3.1677721	17	3 29.5	15.6
2143 Jimarnold	13.6	X	270.78859	352.42294	17.40526	8.36513	0.2341185	0.28614921	2.2807325	17	5 6.3	17.3
2144 Marietta	11.2	X	344.03710	277.65515	138.50772	2.82987	0.0623340	0.20214474	2.8753745	17	11 18.4	14.8
2145 Blaauw	10.9	X	314.16233	279.04244	264.34059	15.01331	0.0965339	0.17086029	3.2164388	17	—	—
2146 Stentor	9.9	X	221.69891	273.22085	131.32316	39.25945	0.1009411	0.08321095	5.1961587	17	6 13.5	17.6
2147 Kharadze	12.0	X	89.93951	309.01601	144.46825	10.07839	0.0536690	0.17418254	3.1754088	17	2 24.7	16.4
2148 Epeios	10.8	X	226.86523	231.66178	176.57244	9.14779	0.0567133	0.08275229	5.2153411	17	6 16.0	18.0
2149 Schwambraniya	11.7	X	253.93452	228.95239	62.59802	7.72307	0.1080367	0.24217309	2.5490917	17	1 30.9	15.6
2150 Nysitmene	13.2	X	346.58126	235.53223	201.03514	25.32471	0.0573100	0.37244276	1.9132117	17	—	—
2151 Hadwiger	11.0	X	177.53957	86.79403	27.92631	15.48726	0.0571206	0.24051678	2.5607812	17	6 30.6	14.9
2152 Hannibal	10.7	X	354.77282	142.22924	250.93218	13.96287	0.2203200	0.17826232	3.1267730	17	11 2.9	14.0
2153 Akiyama	12.0	X	58.29059	31.73153	47.74494	1.18422	0.1519658	0.17852038	3.1237589	17	—	—
2154 Underhill	12.9	X	14.59776	120.05437	0.86944	7.74599	0.1226602	0.23029206	2.6360283	17	—	—
2155 Wodan	12.4	X	261.31181	349.14334	38.62244	2.53563	0.0774550	0.20427301	2.8553678	17	6 16.2	16.4
2156 Kate	12.69	X	264.22076	4.72795	17.17501	5.34754	0.2016332	0.29357477	2.2421099	17	5 18.7	16.0
2157 Ashbrook	12.0	X	336.38744	264.89974	349.46304	8.62731	0.1126945	0.21220304	2.7837805	17	3 23.7	15.6
2158 Tietjen	11.6	X	241.55069	101.93154	187.32228	1.58579	0.1825513	0.18350108	3.0669755	17	1 23.5	16.7
2159 Kukkamäki	12.07	X	75.77557	122.77837	351.15028	3.26761	0.0394859	0.25194791	2.4827265	17	2 8.8	14.9
2160 Spitzer	12.1											

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2161 Grissom	12.2 ^m	X	312.82337 ^o	249.61685 ^o	126.41850 ^o	7.30470 ^o	0.1623727	0.21644441 ^o	2.7472939	17	7 26.1	15.2
2162 Anhui	12.6	X	258.40554	285.69538	128.59815	3.04833	0.1243071	0.29658955	2.2268903	17	7 5.2	15.6
2163 Korczak	11.7	X	86.54365	264.97253	113.30330	2.50977	0.1887556	0.17696764	3.1420046	17	—	—
2164 Lyalya	11.9	X	13.36108	196.87617	115.72571	2.62542	0.1312377	0.17325427	3.1867409	17	8 20.3	15.6
2165 Young	11.3	X	300.75768	24.25613	19.15464	0.94272	0.1758094	0.17823862	3.1270501	17	8 13.9	15.5
2166 Handahl	12.9	X	214.76899	136.69130	163.85191	5.13743	0.2183337	0.27430703	2.3459104	17	—	—
2167 Erin	12.0	X	206.21139	274.04717	252.91669	6.02644	0.1845259	0.24302180	2.5431534	17	10 1.3	16.3
2168 Swope	12.6	X	77.91264	11.33834	314.12595	4.74367	0.1545592	0.25655474	2.4529160	17	12 18.5	16.0
2169 Taiwan	12.5	X	116.97852	358.45326	71.85428	1.52865	0.0480231	0.21145308	2.7903587	17	2 20.7	16.2
2170 Byelorussia	13.9	X	105.24618	116.26233	255.87207	2.07934	0.1827024	0.26446248	2.4037724	17	—	—
2171 Kiev	12.7	X	38.90878	180.15215	102.05819	7.51584	0.1661872	0.29096083	2.2555184	17	8 28.0	14.6
2172 Plavsk	12.2	X	278.89268	334.40896	84.39999	3.32562	0.1414625	0.20015439	2.8944050	17	8 10.0	16.2
2173 Maresjev	11.4	X	277.97498	166.11170	174.66688	14.42457	0.1145423	0.17717238	3.1395835	17	5 8.5	16.2
2174 Asmodeus	13.6	X	142.39531	5.46390	359.97575	8.07291	0.2694960	0.24377885	2.5378855	17	1 25.6	17.3
2175 Andrea Doria	13.8	X	44.45179	143.67981	222.09158	3.70560	0.2074180	0.29887011	2.2155475	17	—	—
2176 Donar	12.2	X	217.38484	179.59692	89.95373	3.04570	0.0548753	0.19657559	2.9294291	17	—	—
2177 Oliver	11.9	X	16.38692	274.61681	51.47756	1.52491	0.1033326	0.17285756	3.1916147	17	9 11.2	15.8
2178 Kazakhstania	13.6	X	256.91463	351.00981	11.42628	3.07432	0.1545098	0.30044467	2.2077999	17	4 18.7	16.6
2179 Platzeck	11.1	X	204.38323	58.03762	14.90556	10.47453	0.0989496	0.18881545	3.0091537	17	6 9.2	15.9
2180 Marjaleena	11.0	X	289.16243	87.81307	233.28028	9.25038	0.0792236	0.18845662	3.0129722	17	4 26.3	15.4
2181 Fogelin	11.9	X	307.03314	116.13418	17.28777	13.00742	0.1187976	0.23625353	2.5914958	17	—	—
2182 Semiot	11.5	X	173.05895	201.74935	51.04895	2.25908	0.1324046	0.17786728	3.1314009	17	12 13.2	16.4
2183 Neufang	11.7	X	58.18796	239.95097	87.28949	18.10784	0.3759712	0.19017219	2.9948245	17	12 20.0	16.2
2184 Fujian	11.6	X	136.22631	120.26150	256.57287	5.19360	0.0994603	0.17408223	3.1766284	17	1 24.3	16.3
2185 Guangdong	11.3	X	307.77419	86.27701	60.59014	9.59513	0.1596968	0.22095680	2.7097619	17	5 7.4	14.8
2186 Keldysh	12.6	X	334.84579	132.66850	285.37705	2.37102	0.1033997	0.22457571	2.6805724	17	11 6.4	15.6
2187 La Silla	13.2	X	139.35742	214.21425	137.27347	13.26097	0.1183711	0.24415137	2.5353034	17	—	—
2188 Orlenok	11.7	X	166.90232	194.60813	140.40176	2.66022	0.0899562	0.19952664	2.9004728	17	1 1.9	15.9
2189 Zaragoza	12.9	X	79.61479	217.63931	128.82372	13.91698	0.2263639	0.26458273	2.4034040	17	—	—
2190 Coubertin	13.2	X	233.37630	315.76457	262.55895	0.82815	0.0890320	0.25374119	2.4710151	17	—	—
2191 Uppsala	11.1	X	132.51782	180.30765	247.31435	9.03187	0.0820584	0.18748296	3.0233947	17	3 13.7	15.6
2192 Pyatigoriya	11.5	X	302.88061	146.74000	201.44171	9.79418	0.0784289	0.17733169	3.1377029	17	6 20.0	15.9
2193 Jackson	10.5	X	222.21617	226.38229	36.61059	11.69043	0.0746437	0.18025154	3.1037262	17	—	—
2194 Arpola	12.6	X	329.15742	102.87786	47.12964	8.52677	0.0415658	0.27757584	2.3274567	17	—	—
2195 Tengström	12.4	X	317.69113	295.55217	100.96345	4.57468	0.1060749	0.29762282	2.2217332	17	9 12.8	14.5
2196 Ellicott	10.25	X	51.57212	308.81371	212.16275	10.32338	0.0558063	0.15428455	3.4428737	17	3 30.9	14.9
2197 Shanghai	11.5	X	60.92349	70.99122	56.36836	2.49798	0.1253836	0.17586303	3.1551476	17	3 5.9	15.4
2198 Cephecha	14.4	X	0.46193	181.24648	223.16931	3.63450	0.1975581	0.23613113	2.5923913	17	12 12.2	16.8
2199 Klet	12.7	X	214.96027	142.75483	146.94063	8.19781	0.2012389	0.29379463	2.2409912	17	—	—
2200 Pasadena	12.8	X	254.41799	210.16301	345.55604	4.59502	0.1488024	0.26433171	2.4045651	17	—	—
2201 Oljato	15.25	X	255.68976	98.26427	74.99046	2.52239	0.7129709	0.30726270	2.1750178	17	10 11.1	19.6
2202 Pele	17.2	X	336.55697	217.94294	169.98180	8.74545	0.5131822	0.28448416	2.2896231	17	7 12.4	18.9
2203 van Rhijn	11.6	X	330.21027	328.77036	50.20062	1.64554	0.1877897	0.18012883	3.1051355	17	8 28.2	15.0
2204 Lyyli	12.1	X	350.24668	283.25477	160.45019	20.56060	0.4070651	0.23653849	2.5894141	17	—	—
2205 Glinka	12.2	X	199.15411	103.89055	227.68821	10.48774	0.1219959	0.18929546	3.0040644	17	1 31.3	17.1
2206 Gabrova	11.4	X	304.14934	164.24021	63.55108	10.93023	0.0522443	0.18836669	3.0139311	17	1 26.6	15.8
2207 Antenor	8.89	X	58.87064	302.36183	159.13741	6.80721	0.0169628	0.08451047	5.1427536	17	2 12.8	15.7
2208 Pushkin	10.96	X	308.60081	6.03518	78.54954	5.40206	0.0311909	0.15060524	3.4987211	17	11 3.5	15.7
2209 Tianjin	11.1	X	18.24807	261.66015	150.89522	2.61280	0.0673905	0.20527077	2.8461076	17	—	—
2210 Lois	14.0	X	112.40208	215.91206	123.54096	2.93207	0.2293886	0.26461982	2.4028194	17	—	—
2211 Hanuman	12.2	X	270.08646	204.68206	145.91831	17.26950	0.0822637	0.17356210	3.1829717	17	5 18.2	17.2
2212 Hephaistos	13.87	X	98.43335	209.34957	27.56149	11.55928	0.8376690	0.31050965	2.1598287	17	11 7.4	19.1
2213 Meeus	13.4	X	65.57629	222.21561	126.93333	5.33178	0.2272327	0.30244938	2.1980332	17	—	—
2214 Carol	11.8	X	47.23934	137.47342	187.40960	14.26986	0.2673811	0.17564404	3.1577695	17	11 20.0	16.0
2215 Sichuan	11.7	X	125.50065	332.30227	71.13159	10.75008	0.2621863	0.21086261	2.7955655	17	3 4.7	15.9
2216 Kerch	11.2	X	218.83400	181.91688	155.74036	10.44318	0.0981705	0.18764164	3.0216899	17	3 1.8	15.8
2217 Eltigen	11.4	X	101.94158	173.50779	127.49246	2.24813	0.1676077	0.17585189	3.1552809	17	12 7.0	16.3
2218 Wotho	11.2	X	62.84025	322.51666	96.57011	14.94518	0.1622775	0.18567759	3.0429610	17	—	—
2219 Mannucci	11.0	X	119.27530	294.46279	72.57629	7.58469	0.1188961	0.17630092	3.1499210	17	—	—
2220 Hicks	12.3	X	191.47305	279.82841	94.78891	2.58700	0.1551600	0.17493475	3.1662995	17	3 23.6	17.4
2221 Chilton	12.9	X	319.55476	81.98624	245.82660	13.79196	0.1369661	0.23626504	2.5914116	17	5 31.3	15.9
2222 Lermontov	11.3	X	63.21920	337.10350	94.90859	2.57365	0.1655113	0.17867280	3.1219822	17	—	—
2223 Sarpedon	9.41	X	247.95349	54.02812	220.88051	15.95994	0.0153508	0.08231602	5.2337521	17	2 8.5	16.6
2224 Tucson	11.9	X	299.82737	243.07381	51.23117	2.66696	0.0451211	0.20141990	2.8822687	17	4 9.8	15.8
2225 Serkowski	12.0	X	200.43147	9.78485	88.09597	3.26188	0.0344855	0.20471751	2.8512331	17	7 8.2	15.9
2226 Cunitza	11.7	X	199.34503	331.83056	42.94139	2.53957	0.0785250	0.20242836	2.8726881	17	3 24.4	16.0
2227 Otto Struve	13.4	X	140.74426	254.09503	178.89644	4.94960	0.1742948	0.29465170	2.2366434	17	3 26.4	16.2
2228 Soyuz-Apollo	11.4	X	341.69931	285.71014	140.40256	1.98880	0.1837714	0.17739109	3.1370023	17	11 22.8	14.8
2229 Mezzarco	13.0	X	40.46381	32.76206	271.97174	12.68728	0.2637101	0.22271213	2.6955049	17	10 9.5	16.3
2230 Yunnan	11.9	X	11.81531	254.28510	153.79597	2.56680	0.0645493	0.20399358	2.8579747	17	12 17.7	15.5
2231 Durrell	12.3	X	306.81302	24.65962	342.30386	8.23667	0.2517840	0.21883466	2.7272522	17	6 19.3	16.0
2232 Altaj	12.1	X	35.31863	92.30234	218.23861	3.69349	0.1421517	0.22618886	2.6678121	17	9 24.8	15.0
2233 Kuznetsov	12.3	X	45.39369	159.12064	247.25052	3.41424	0.0814058	0.28663942	2.2781314	17	—	—
2234 Schmadel	12.2	X	16.42529	271.99737	6.10827	25.23968	0.1986163	0.22215112	2.7000411	17	7 12.1	15.4
2235 Vittore	10.6	X	100.26261	274.66405	205.05274	18.78240	0.2139907	0.17154796	3.2078374	17	5 5.1	15.2
2236 Austrasia	12.3	X	78.34162	301.08957	8.22732	10.11956	0.2180732	0.27439889	2.3453869	17	12 6.2	15.8
2237 Melnikov	11.9	X	15.01267	266.40636	118.47574	2.40037	0.2174532	0.17682430	3.1437023	17	12 5.2	15.2
2238 Steshenko	12.5	X	162.39133	294.03029	33.44804	1.31110	0.1789534	0.18419056	3.0593169	17	1 1.5	17.2
2239 Paracelsus	10.9	X	270.91811	3.10541	20.09111	10.93819	0.1047352	0.17267818	3.1938247	17	6 20.8	15.7
2240 Tsai	11.8	X	330.90152	24.58840	60.89799	0.84218	0.1535296</					

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2241 Alcaathous	8.64	X	297.45440	291.57646	267.98827	16.62609	0.0673614	0.08352515	5.1831195	17	1 8.1	15.5
2242 Balaton	13.2	X	193.73817	96.06983	343.86787	2.53614	0.1182314	0.30044780	2.2077846	17	5 28.2	16.2
2243 Lönnrot	12.5	X	216.94166	303.44869	22.49938	6.84678	0.1969265	0.29238839	2.2481708	17	1 29.4	16.1
2244 Tesla	11.8	X	260.21041	297.80604	106.49289	7.82347	0.1808667	0.20920421	2.8103199	17	6 24.2	16.2
2245 Hekatosotos	11.6	X	274.70685	317.10133	85.18892	11.85130	0.1334027	0.23026194	2.6362582	17	7 12.8	15.3
2246 Bowell	10.56	X	244.36595	21.54440	155.65756	6.49410	0.0938304	0.12518644	3.9575936	17	11 25.5	16.3
2247 Hiroshima	13.5	X	279.20716	29.70184	7.39071	5.94158	0.1106882	0.25723631	2.4485813	17	7 13.9	16.8
2248 Kanda	11.2	X	170.54784	145.91974	33.79216	1.63392	0.1161799	0.18056923	3.1000847	17	9 17.5	16.0
2249 Yamamoto	11.1	X	45.34840	111.96537	147.91462	4.10468	0.0808683	0.17299712	3.1898980	17	7 27.6	15.1
2250 Stalingrad	11.9	X	276.97274	176.27591	157.91354	1.52393	0.1803317	0.17268283	3.1937673	17	4 19.7	16.7
2251 Tikhov	11.5	X	345.29603	183.65028	192.99699	7.43948	0.1491004	0.22089582	2.7102606	17	9 25.9	14.1
2252 CERGA	12.5	X	87.81928	24.14778	358.35575	4.22225	0.0729959	0.23299450	2.6156056	17	—	—
2253 Espinette	12.8	X	228.40237	175.75094	143.95743	3.88036	0.2784575	0.28560833	2.2836111	17	1 31.7	16.8
2254 Requiem	12.3	X	50.37802	24.64757	338.18423	5.04258	0.1501333	0.27496036	2.3421929	17	—	—
2255 Qinghai	11.7	X	110.62811	346.79067	41.12620	14.19435	0.1522700	0.18067421	3.0988837	17	1 16.4	16.1
2256 Wiśniewski	12.1	X	199.73912	193.01825	116.29478	0.46477	0.1743053	0.18141677	3.0904219	17	1 13.3	17.2
2257 Kaarina	13.3	X	300.39491	129.23274	233.71413	5.07035	0.2391279	0.25120465	4.8762123	17	6 3.8	16.7
2258 Viipuri	11.9	X	128.60313	174.60973	307.35326	1.47894	0.0809157	0.22300709	2.6931276	17	5 14.8	15.7
2259 Sofievka	12.5	X	107.21426	12.11194	280.27547	4.67990	0.1853977	0.28363174	2.2942082	17	12 12.6	16.1
2260 Neoptolemus	9.31	X	226.01188	320.57329	86.57336	17.77959	0.0433261	0.08321133	5.1961428	17	6 14.7	16.4
2261 Keeler	12.8	X	3.41808	99.47292	102.75943	22.73898	0.2368232	0.26872003	2.3783149	17	1 18.0	15.3
2262 Mitidika	12.2	X	124.30512	351.38681	0.54684	13.39429	0.2789245	0.23691753	2.5866515	17	—	—
2263 Shaanxi	11.3	X	182.20280	314.42800	54.39100	11.40323	0.1100621	0.18780987	3.0198852	17	3 8.9	16.2
2264 Sabrina	10.8	X	79.58075	79.07389	240.10389	0.15851	0.1767497	0.17826131	3.1267848	17	12 6.9	15.4
2265 Verbaandert	12.7	X	11.72274	338.89129	133.30018	19.80434	0.2093664	0.23269255	2.6178679	17	—	—
2266 Tchaikovsky	10.80	X	298.26323	205.78473	229.44464	13.24670	0.1816588	0.15713875	3.4010565	17	9 14.1	15.5
2267 Agassiz	13.4	X	99.71201	300.07803	328.57514	1.95227	0.1384552	0.29844070	2.2176722	17	10 31.3	16.4
2268 Szmytowna	11.7	X	306.83579	324.57127	89.63092	3.30451	0.1160257	0.19559036	2.9392583	17	9 16.6	15.3
2269 Efremlana	11.0	X	285.31580	34.96438	66.74884	15.37817	0.0847038	0.17813643	3.1282459	17	10 25.1	15.4
2270 Yazhi	11.4	X	148.09272	189.04051	75.98789	2.12107	0.1732341	0.17601172	3.1533704	17	12 5.2	16.4
2271 Kiso	11.0	X	34.91736	179.57949	136.47411	3.38840	0.0589963	0.21498406	2.7597212	17	9 23.8	14.5
2272 Montezuma	13.94	X	9.31140	278.10555	175.54396	24.33327	0.0899879	0.38645897	1.8666682	17	—	—
2273 Yariilo	13.4	X	78.68266	41.69566	66.15746	0.39092	0.1659178	0.25682947	2.4511665	17	2 13.9	15.7
2274 Ehrsson	12.5	X	25.82449	187.15346	348.27847	2.24749	0.2296152	0.26348071	2.4097399	17	1 24.8	14.5
2275 Cuitlahuac	12.5	X	289.21087	154.24804	197.20559	6.39373	0.1693245	0.28328304	2.2960905	17	5 11.9	15.6
2276 Warck	12.9	X	29.91954	55.27140	215.37393	2.46712	0.1710023	0.26942204	2.3741818	17	7 16.3	14.6
2277 Moreau	12.0	X	16.95220	71.07992	105.04497	11.54825	0.1244790	0.23488371	2.6015617	17	2 4.8	15.0
2278 Götz	13.5	X	233.33072	207.21361	53.41848	4.20359	0.1492025	0.25659021	2.4526900	17	—	—
2279 Barto	12.97	X	279.63419	62.19541	139.94256	2.98381	0.1570962	0.25566093	2.4586298	17	—	—
2280 Kunikov	13.3	X	97.42991	264.13753	106.51027	3.56800	0.1415855	0.30652957	2.1784844	17	—	—
2281 Biela	13.4	X	128.29946	109.55919	206.54994	1.48627	0.1449835	0.30450869	2.1881122	17	—	—
2282 Andrés Bello	13.2	X	193.37374	238.53182	207.78704	4.98324	0.0800125	0.30146333	2.2028236	17	6 5.4	16.2
2283 Bunke	12.5	X	109.57955	346.88628	196.84946	6.73203	0.0868034	0.29229043	2.2486731	17	7 7.4	15.2
2284 San Juan	12.5	X	209.76517	67.83431	145.90704	5.28337	0.0503625	0.27789898	2.3256521	17	12 20.7	15.6
2285 Ron Helin	14.0	X	139.05431	182.81540	157.84516	5.33387	0.2080715	0.29803471	2.2196857	17	—	—
2286 Fesenkov	12.8	X	102.50379	279.04904	59.48517	1.34622	0.0940081	0.30358954	2.1925265	17	—	—
2287 Kalmykia	12.9	X	0.66865	214.61027	93.26337	5.28627	0.1697188	0.29398779	2.2400095	17	7 5.9	14.5
2288 Karolinum	10.9	X	96.99814	100.70200	75.73435	14.57437	0.1605019	0.19887523	2.9068029	17	6 30.3	15.0
2289 McMillan	13.6	X	223.92913	42.82610	189.81350	2.15332	0.1431140	0.23035987	2.6355110	17	—	—
2290 Helffrich	12.4	X	249.25579	270.84198	155.90264	11.55280	0.2342640	0.23636663	2.5906690	17	7 4.8	16.8
2291 Kevo	10.8	X	223.88920	296.80462	169.50241	24.49724	0.0653781	0.18570768	3.0426323	17	8 12.8	15.6
2292 Seili	11.7	X	279.02355	129.10510	172.47347	14.53382	0.2369571	0.23224944	2.6211966	17	2 25.4	16.2
2293 Guernica	11.2	X	127.69106	132.38375	23.61359	0.58845	0.1351646	0.17800969	3.1297306	17	7 8.4	15.8
2294 Andronikov	11.7	X	234.73774	42.74413	290.89923	6.95400	0.1171129	0.23742505	2.5829640	17	2 28.2	15.7
2295 Matusovskij	11.9	X	6.65945	70.59146	313.54658	2.50942	0.0959482	0.19932259	2.9024519	17	11 10.2	15.5
2296 Kugultinov	11.7	X	180.52883	100.14263	42.23722	1.25452	0.1666187	0.17370256	3.1812556	17	8 13.2	17.0
2297 Daghestan	11.3	X	87.21847	92.83973	140.51538	1.61240	0.1267547	0.17480266	3.1678944	17	8 27.2	15.6
2298 Cindijon	12.8	X	124.16243	147.58186	198.43832	5.16463	0.1732851	0.26417403	2.4055218	17	—	—
2299 Hanko	13.2	X	107.88175	165.98387	174.20594	5.25638	0.2961509	0.23717774	2.5847592	17	—	—
2300 Stebbins	11.8	X	117.90441	356.47676	31.78305	2.31826	0.0777871	0.20617811	2.8377514	17	1 5.6	15.6
2301 Whitford	11.0	X	66.36309	7.80599	79.02343	11.64894	0.2118764	0.17396744	3.1780257	17	2 2.2	14.6
2302 Florya	11.8	X	168.23618	69.33153	307.61405	12.06279	0.1943240	0.22884609	2.6471205	17	2 22.8	16.1
2303 Retsina	11.2	X	153.81427	329.66553	195.35893	18.95061	0.1162420	0.19026978	2.9938004	17	8 9.2	16.2
2304 Slavia	12.1	X	20.76651	59.11195	195.91724	13.59948	0.1319984	0.23338641	2.6126767	17	6 6.0	15.0
2305 King	11.5	X	311.46335	359.34443	25.26932	7.45897	0.0309317	0.21196231	2.7858877	17	8 27.7	15.2
2306 Bauschinger	12.2	X	102.18910	103.27372	236.73230	4.23476	0.0644956	0.21832966	2.7314561	17	—	—
2307 Garuda	11.1	X	96.94439	340.13543	251.53718	7.70951	0.0552377	0.18533081	3.0467558	17	8 22.8	15.6
2308 Schilt	11.9	X	117.69754	233.60042	34.26535	14.17555	0.1717880	0.24213220	2.5493787	17	11 15.6	15.9
2309 Mr. Spock	11.3	X	185.95018	272.21433	157.21209	10.97903	0.0917411	0.18858032	3.0116544	17	5 20.9	16.1
2310 Olshaniya	11.6	X	185.45549	331.02290	124.13347	2.65001	0.1613216	0.17696304	3.1420591	17	6 20.9	16.7
2311 El Leoncito	10.52	X	107.06364	189.63891	156.67682	6.61739	0.0412487	0.14212181	3.6366003	17	—	—
2312 Duboshin	10.18	X	225.27149	341.95778	61.44133	5.16507	0.1565081	0.12496248	3.9623208	17	5 29.4	16.3
2313 Aruna	12.9	X	244.50166	108.28393	229.64321	1.83772	0.1888913	0.25565060	2.4586960	17	3 11.4	16.9
2314 Field	13.6	X	92.02553	179.75151	34.03375	5.72770	0.0245358	0.28996530	2.2606780	17	7 18.5	16.2
2315 Czechoslovakia	10.6	X	182.16571	13.39060	30.12596	10.70840	0.1057344	0.18833443	3.0142752	17	4 13.9	15.3
2316 Jo-Ann	12.9	X	257.02520	147.24115	148.68450	1.81712	0.1668409	0.25679682	2.4513742	17	1 31.5	16.8
2317 Galya	13.42	X	56.41976	204.26840	187.24069	4.16952	0.1653093	0.24597231	2.5227753	17	—	—
2318 Lubarsky	13.7	X	278.51973	241.93783	153.26896	3.59758	0.1323183	0.29166634	2.2518796	17	7 2.7	16.6
2319 Aristides	12.1	X	163.68314	267.06486	112.66504	2.96892	0.0899322	0.19875289	2.9079956	17	2 22.2	16.4

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>	
2321	Lužnice	12.0	X	184.31110	6.09273	45.70174	7.79914	0.0629369	0.18901895	3.0069934	17	4 24.4	16.5
2322	Kitt Peak	13.1	X	50.62802	191.09634	194.79566	2.40529	0.0420425	0.28397471	2.2923606	17	—	—
2323	Zverev	11.1	X	53.65022	98.84638	5.41148	4.64215	0.1502382	0.17720921	3.1391485	17	1 24.8	14.8
2324	Janice	11.5	X	209.33465	305.58664	315.67211	0.39938	0.1798224	0.18200511	3.0837583	17	—	—
2325	Chernykh	11.9	X	246.43345	267.38088	139.94311	1.91989	0.1757540	0.17723910	3.1387955	17	6 17.1	16.8
2326	Tololo	10.8	X	213.60141	259.67746	155.82928	15.14689	0.1580544	0.20376308	2.8601296	17	5 29.6	15.7
2327	Gershberg	13.6	X	50.93775	210.99093	174.95656	4.04001	0.1302762	0.27044926	2.3681662	17	—	—
2328	Robeson	12.9	X	286.09460	340.88206	182.19513	10.01629	0.1453822	0.27509795	2.3414118	17	—	—
2329	Orthos	14.5	X	0.91524	146.00481	169.31464	24.45533	0.6534393	0.26349221	2.4096697	17	4 10.8	16.8
2330	Ontake	11.5	X	297.36964	130.70187	140.54267	8.65443	0.0377323	0.17345138	3.1843261	17	3 17.1	16.1
2331	Parvulesco	12.5	X	223.95229	223.32498	255.25142	3.71201	0.2207216	0.26080629	2.4261855	17	8 16.3	16.4
2332	Kalm	10.9	X	33.21680	243.34554	61.19210	14.55180	0.0598811	0.18285262	3.0742223	17	9 13.0	15.2
2333	Porthan	11.8	X	135.20170	99.45108	39.93379	11.94289	0.1375989	0.22923014	2.6441631	17	6 20.9	15.8
2334	Cuffey	13.1	X	54.98465	112.52576	120.98185	4.08776	0.0746287	0.28850946	2.2682766	17	6 24.8	15.4
2335	James	13.4	X	272.12101	79.43875	19.99257	36.32058	0.3599891	0.31853214	2.1234101	17	9 16.1	17.0
2336	Xinjiang	12.0	X	64.41936	37.64176	87.25952	2.78467	0.1577633	0.17276049	3.1928102	17	3 12.9	15.8
2337	Boubin	12.0	X	251.78552	27.28645	37.24374	14.34886	0.1685356	0.23596089	2.5936380	17	7 12.9	16.2
2338	Bokhan	11.9	X	176.11037	201.83970	112.62327	3.20384	0.0632094	0.20684472	2.8316512	17	—	—
2339	Anacreon	13.49	X	72.96206	341.09729	11.81568	4.85417	0.1983699	0.24553830	2.5257472	17	—	—
2340	Hathor	20.2	X	347.37930	39.98058	211.43337	5.85673	0.4499262	1.27144949	0.8438592	17	—	—
2341	Aoluta	12.8	X	161.68120	347.66708	61.59245	4.07425	0.1515888	0.29944294	2.2127210	17	3 17.2	15.8
2342	Lebedev	11.9	X	154.11697	215.59579	195.17686	0.36247	0.1328829	0.16979839	3.2298351	17	3 29.7	16.8
2343	Siding Spring	13.3	X	199.14211	155.31515	218.07017	1.76666	0.2545745	0.27603565	2.3361063	17	3 15.9	17.3
2344	Xizang	11.6	X	123.92434	239.50570	99.27825	3.89851	0.1890301	0.21585391	2.7523021	17	—	—
2345	Fučik	10.80	X	323.61847	135.75050	303.86898	9.15197	0.0776426	0.18811336	3.0166363	17	11 12.8	14.9
2346	Lilio	12.2	X	76.52230	106.50098	244.65750	5.92559	0.1567727	0.26995515	2.3710551	17	—	—
2347	Vinata	11.3	X	299.03891	108.39966	290.46331	13.08351	0.2129619	0.18154766	3.0889362	17	7 28.6	15.4
2348	Michkovitch	12.8	X	60.15913	295.73415	186.37374	4.67185	0.1715819	0.26549454	2.3975389	17	1 21.9	14.8
2349	Kurchenko	11.3	X	48.42153	218.47474	133.13718	17.48506	0.1199806	0.21389305	2.7690977	17	12 8.9	15.2
2350	von Lude	13.1	X	306.72014	287.61883	141.08170	5.07461	0.1271272	0.29357102	2.2421290	17	10 9.7	15.2
2351	O' Higgins	13.0	X	44.12227	61.30997	332.89446	3.74203	0.1864714	0.24508309	2.5288738	17	—	—
2352	Kurchatov	11.5	X	279.65581	118.56118	232.08326	14.82070	0.1090041	0.17984755	3.1083723	17	5 20.4	15.9
2353	Alva	11.5	X	18.72512	301.18574	24.66090	4.79637	0.1126137	0.20980320	2.8049684	17	9 16.8	14.6
2354	Lavrov	11.8	X	205.20879	189.51613	176.02432	3.26994	0.1033304	0.21808306	2.7335148	17	3 16.1	16.0
2355	Nei Monggol	11.7	X	207.18582	277.80789	53.84083	10.00163	0.1157281	0.18776101	3.0204091	17	2 15.7	16.6
2356	Hirons	10.8	X	47.30716	358.01636	189.09992	15.60326	0.0404980	0.16934674	3.2355751	17	4 26.1	15.3
2357	Phereclos	8.94	X	263.06842	74.31106	179.24885	2.66894	0.0447184	0.08289518	5.2093458	17	2 2.8	16.0
2358	Bahner	11.1	X	229.41695	51.52738	344.49199	9.68544	0.0975133	0.18751796	3.0230185	17	5 18.9	15.9
2359	Debehogne	12.9	X	341.88111	76.26356	206.12817	4.34209	0.1161517	0.26103623	2.4247605	17	4 30.7	15.4
2360	Volgo—Don	12.8	X	202.85766	2.76954	38.28118	3.39436	0.1946459	0.22546091	2.6735514	17	4 26.9	17.4
2361	Gogol	12.0	X	216.82132	85.19466	42.97256	1.62232	0.1418329	0.17736133	3.1373533	17	8 29.8	16.9
2362	Mark Twain	13.3	X	212.86426	350.62705	9.05868	3.95170	0.1927837	0.30282147	2.1962323	17	3 5.5	16.7
2363	Cebriones	9.11	X	262.70921	54.81922	211.74317	32.13632	0.0357778	0.08305980	5.2024605	17	2 10.8	16.5
2364	Seillier	11.3	X	343.53872	168.57983	42.81435	10.71242	0.1409307	0.17418120	3.1754250	17	2 19.8	15.6
2365	Interkosmos	11.3	X	0.28467	208.07239	282.81667	5.34615	0.1151899	0.24283364	2.5444669	17	—	—
2366	Aaryn	13.9	X	26.67791	110.54096	308.27392	1.08240	0.1273335	0.29386882	2.2406140	17	—	—
2367	Praha	13.1	X	49.90219	298.14343	190.85119	1.87686	0.0994549	0.30065807	2.2067551	17	—	—
2368	Beltrovata	15.21	X	39.63251	43.08098	287.33788	5.22220	0.4131124	0.32263673	2.1053623	17	12 24.8	17.6
2369	Chekhov	12.0	X	244.64086	241.29185	47.93857	2.63432	0.0483462	0.21237510	2.7822767	17	1 26.0	16.1
2370	van Altena	13.0	X	207.37083	315.36340	10.37984	8.27614	0.1838217	0.22049458	2.7135476	17	2 3.3	17.6
2371	Dimitrov	12.4	X	230.17975	283.25154	235.01230	1.77854	0.0138597	0.25842379	2.4410746	17	11 5.5	15.4
2372	Proskurin	11.8	X	75.15195	317.45072	98.21262	2.74343	0.1770332	0.17942110	3.1132957	17	—	—
2373	Immo	12.3	X	270.02644	216.15185	146.36301	10.07894	0.1714843	0.21083084	2.7958463	17	5 16.1	16.8
2374	Vladvysotskij	11.6	X	318.15082	16.59471	347.32149	15.06762	0.2132513	0.18184326	3.0855878	17	7 16.7	15.6
2375	Radek	10.61	X	108.05887	101.53351	110.73055	14.97787	0.2106965	0.17373389	3.1808732	17	9 8.4	15.7
2376	Martynov	10.8	X	326.80172	300.95790	61.19423	3.83817	0.1170736	0.17196716	3.2026222	17	8 9.0	14.8
2377	Shcheglov	12.0	X	281.67066	163.03850	262.40038	1.00777	0.0578769	0.20182503	2.8784103	17	9 2.3	16.0
2378	Pannekoek	11.0	X	346.15989	265.16002	181.16542	14.24671	0.1429797	0.20068620	2.8892894	17	12 30.5	14.6
2379	Heiskanen	10.90	X	135.49356	176.88347	151.33164	0.46932	0.2763720	0.17512400	3.1640179	17	—	—
2380	Heilongjiang	12.8	X	309.04644	108.31673	324.64687	1.92123	0.0600264	0.30367747	2.1921032	17	10 26.6	14.9
2381	Landi	11.7	X	345.14958	277.84213	150.22336	13.62776	0.1687708	0.23373298	2.6100934	17	12 13.9	14.5
2382	Nonie	11.8	X	244.87449	66.74326	246.01998	30.98212	0.3299806	0.21491904	2.7602778	17	1 30.9	17.6
2383	Bradley	13.0	X	3.40358	184.59940	14.42767	3.56782	0.1049397	0.29832334	2.2182538	17	1 26.2	15.4
2384	Schulhof	11.8	X	209.72775	205.64778	7.91246	13.53081	0.1194603	0.23355936	2.6113867	17	12 5.1	15.9
2385	Mustel	13.4	X	132.56665	190.42495	153.24661	4.08111	0.1615360	0.29358443	2.2420607	17	—	—
2386	Nikonov	11.7	X	64.66773	311.72531	4.90079	9.08511	0.1582851	0.20870809	2.8147718	17	11 14.7	15.6
2387	Xi'an	11.3	X	89.28867	41.73274	53.08581	10.94912	0.0709453	0.18723502	3.0260632	17	3 1.4	15.5
2388	Gase	13.0	X	178.50291	253.26714	324.55983	2.21522	0.1822108	0.25709311	2.4494905	17	11 10.9	17.1
2389	Dibaj	12.8	X	191.34026	337.67914	333.82618	7.83801	0.2348697	0.25818203	2.4425982	17	—	—
2390	Nežárka	12.2	X	276.71960	354.84139	325.83991	10.32788	0.1441389	0.23220729	2.6215138	17	3 23.8	16.3
2391	Tomita	12.5	X	345.06798	282.64778	163.32242	3.01111	0.1338616	0.25846353	2.4408244	17	—	—
2392	Jonathan Murray	13.6	X	86.08441	302.43635	141.24828	3.36796	0.1529971	0.27447890	2.3449310	17	1 13.7	15.6
2393	Suzuki	10.6	X	305.87188	113.86888	223.96887	10.28679	0.1917170	0.17014282	3.2254746	17	5 26.2	15.1
2394	Nadeev	11.9	X	216.65367	300.95669	127.53886	1.62729	0.2133372	0.17438510	3.1729493	17	6 14.7	17.3
2395	Aho	12.4	X	72.94331	161.52345	100.39977	0.30289	0.0439297	0.18211212	3.0825501	17	9 2.0	16.7
2396	Kochi	11.5	X	253.36789	51.73016	158.41761	12.59127	0.0711118	0.21099850	2.7943650	17	—	—
2397	Lappajärvi	11.0	X	302.91624	297.09017	145.78662	10.30754	0.1789950	0.18189210	3.0850354	17	10 10.4	14.9
2398	Jilin	13.3	X	331.74977	11.88525	88.05858							

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2401 Aehlita	12.4 ^m	X	325.42754 ^o	37.06258 ^o	50.91965 ^o	4.32858 ^o	0.0596779	0.21371918 ^o	2.7705993	17	12 2.6	16.0
2402 Satpaev	12.7	X	120.22332	64.23101	337.74114	5.17063	0.1305312	0.29752855	2.2222024	17	1 2.8	14.8
2403 Sumava	12.2	X	141.03339	39.34816	290.41302	3.30667	0.1310697	0.24266412	2.5456519	17	—	—
2404 Antartica	11.7	X	352.03454	146.02685	110.86028	2.68978	0.1338864	0.17838956	3.1252860	17	4 27.9	15.4
2405 Welch	12.09	X	31.73401	2.84049	128.25507	2.24768	0.1338351	0.17192231	3.2031791	17	1 21.9	15.8
2406 Orelskaya	13.2	X	238.61971	347.74423	12.54862	2.30630	0.1630767	0.30346266	2.1931376	17	3 28.6	16.2
2407 Haug	10.77	X	114.47999	10.18721	342.21856	2.47401	0.2222287	0.19757021	2.9195892	17	—	—
2408 Astapovich	11.9	X	89.76910	103.25134	164.38088	17.71006	0.2406881	0.22986405	2.6392995	17	10 31.9	16.2
2409 Chapman	12.8	X	58.68402	208.08163	140.75738	3.51229	0.1914713	0.28893543	2.2660467	17	—	—
2410 Morrison	12.7	X	358.40207	62.65563	126.53717	2.39641	0.0629010	0.29881690	2.2158105	17	1 9.9	15.0
2411 Zellner	12.75	X	307.11263	129.76641	131.00380	1.61599	0.0867812	0.29679467	2.2258641	17	2 5.9	15.7
2412 Wil	11.8	X	59.18980	343.37781	303.52418	7.12603	0.1469482	0.22455809	2.6807125	17	9 27.9	15.3
2413 van de Hulst	11.3	X	263.82429	253.34234	166.51307	10.65508	0.1152902	0.18834699	3.0141412	17	7 25.6	15.9
2414 Vibeke	11.4	X	319.21781	47.15859	357.04951	16.75622	0.1291688	0.17228472	3.1986855	17	9 18.8	15.3
2415 Ganesa	12.2	X	73.99094	209.23783	89.77375	2.37277	0.0374788	0.22719373	2.6599399	17	10 22.6	15.8
2416 Sharonov	11.1	X	169.00631	107.23103	148.41364	10.50383	0.0439941	0.18833586	3.0142599	17	12 16.2	15.7
2417 McVittie	12.1	X	161.59921	19.64627	84.55282	3.10836	0.2240176	0.17388083	3.1790808	17	6 13.7	17.5
2418 Voskovec–Werich	12.8	X	103.13009	32.78791	31.21850	1.31643	0.1583863	0.17823598	3.1270810	17	2 19.1	16.9
2419 Moldavia	13.4	X	61.52430	260.77346	168.00209	6.39976	0.0914775	0.28334662	2.2957470	17	—	—
2420 Ciurlionis	12.2	X	56.32500	197.83488	205.63663	14.61075	0.1331728	0.24064062	2.5599025	17	—	—
2421 Nininger	10.7	X	225.18099	278.92411	77.43884	10.19648	0.0427535	0.16896458	3.2404521	17	4 8.9	15.6
2422 Perovskaya	13.2	X	324.41788	52.21120	159.95667	6.40807	0.1973600	0.27728882	2.3290625	17	—	—
2423 Ibarruri	13.3	X	315.41511	80.64496	264.95782	4.05710	0.2825313	0.30443120	2.1884835	17	5 15.1	16.0
2424 Tautenburg	13.1	X	344.10840	92.95613	30.18227	8.91349	0.1343358	0.27368911	2.3494401	17	—	—
2425 Shenzhen	11.2	X	294.86551	242.61375	57.70736	10.86994	0.0934303	0.18933266	3.0036709	17	4 3.9	15.6
2426 Simonov	11.6	X	108.62559	4.55236	237.13881	8.46611	0.1132648	0.19823822	2.9130266	17	9 26.6	16.0
2427 Kobzar	12.6	X	29.36298	171.36268	227.60223	4.16228	0.1661558	0.21735616	2.7396058	17	—	—
2428 Kamenyar	11.4	X	39.67911	351.66795	8.30459	9.31246	0.0958624	0.17495405	3.1660666	17	11 23.7	15.7
2429 Schürer	11.9	X	222.00546	30.10411	17.89496	15.05653	0.1016095	0.23902651	2.5714140	17	5 18.9	15.9
2430 Bruce Helin	11.8	X	21.84540	309.88880	45.85360	23.45943	0.2146468	0.27140404	2.3626090	17	11 18.5	13.9
2431 Skovoroda	12.7	X	38.68482	340.18103	328.73400	2.97397	0.2811213	0.22892314	2.6465266	17	10 20.9	15.5
2432 Soomana	12.7	X	119.97126	81.19708	7.84453	6.76488	0.1130750	0.27323111	2.3520648	17	3 16.3	15.5
2433 Sootiyo	11.5	X	195.44596	71.29383	188.26891	10.36629	0.2220186	0.23425345	2.6062258	17	—	—
2434 Bateson	11.4	X	194.24658	284.48262	27.36585	15.62929	0.1704840	0.18237076	3.0796350	17	1 14.2	16.7
2435 Horemheb	14.7	X	158.79200	183.64470	162.57678	3.96830	0.2055981	0.30146484	2.2028162	17	—	—
2436 Hatshepsut	12.2	X	236.20828	293.38290	233.75237	4.10367	0.0987015	0.17370831	3.1811854	17	11 6.8	16.9
2437 Amnestia	12.9	X	48.05074	151.42903	218.96256	2.94603	0.1485985	0.30438942	2.1886838	17	—	—
2438 Oleshko	12.9	X	315.20585	171.14425	52.28751	4.90117	0.1083275	0.29321323	2.2439526	17	—	—
2439 Ulugbek	11.7	X	5.70299	334.41962	114.46597	0.28325	0.1565212	0.17760253	3.1345120	17	—	—
2440 Educatio	13.1	X	17.49270	77.84613	227.19902	4.10582	0.1625756	0.29885870	2.2156039	17	8 10.8	14.6
2441 Hibbs	13.9	X	27.48228	217.01444	140.13250	3.74218	0.1933511	0.26356646	2.4092172	17	11 30.3	16.3
2442 Corbett	12.7	X	75.91084	104.21846	190.64288	5.09572	0.1171730	0.26710354	2.3879008	17	11 3.3	15.6
2443 Tomeileen	10.2	X	100.31710	68.37064	118.76897	11.44493	0.0584674	0.18923554	3.0046985	17	7 4.6	14.5
2444 Lederle	11.8	X	239.60569	142.39327	286.13073	15.12223	0.1319092	0.21884495	2.7271668	17	7 7.7	15.8
2445 Blazhko	12.1	X	307.64925	340.96857	86.11427	6.07195	0.1473285	0.28835919	2.2690646	17	10 6.9	14.3
2446 Lunacharsky	13.0	X	331.92255	251.35200	22.08862	3.31162	0.1614304	0.27275415	2.3548060	17	3 23.1	15.7
2447 Kronstadt	12.9	X	310.58536	210.57441	146.87181	8.77973	0.2655801	0.24396728	2.3565786	17	6 7.6	16.2
2448 Sholokhov	10.8	X	350.11236	72.95880	131.13921	17.68300	0.1176304	0.21129339	2.7917645	17	2 7.5	14.2
2449 Kenos	14.26	X	258.57299	102.25283	179.86092	24.98572	0.1684584	0.37374638	1.9087603	17	—	—
2450 Ioannisiani	11.7	X	169.10109	97.27833	117.02173	2.52740	0.1024603	0.17850467	3.1239423	17	10 27.6	16.5
2451 Dollfus	11.7	X	111.36045	325.44306	331.79701	8.58967	0.1523310	0.21916507	2.7245105	17	12 13.5	16.0
2452 Lyot	11.4	X	172.07600	194.44222	2.70762	11.77189	0.1131272	0.17507669	3.1645880	17	10 7.5	16.4
2453 Wabash	11.2	X	109.78113	340.60790	11.82986	10.32221	0.1146372	0.18812065	3.0165584	17	—	—
2454 Olaus Magnus	13.4	X	197.06468	76.27584	247.62476	4.72718	0.2033316	0.29176583	2.2513677	17	1 6.7	16.9
2455 Somville	11.8	X	261.90371	116.85856	300.74044	7.54128	0.0876465	0.21887638	2.7269057	17	7 23.9	15.7
2456 Palamedes	9.3	X	209.19080	94.92999	327.37036	13.90854	0.0735542	0.08481101	5.1305968	17	6 12.3	16.6
2457 Rublyov	12.5	X	76.86487	76.29671	140.72892	6.27038	0.0657059	0.22985029	2.6394048	17	7 10.0	15.8
2458 Veniakaverin	11.9	X	115.13519	183.57792	128.17410	2.08508	0.1417215	0.17807246	3.1289951	17	12 29.3	16.8
2459 Spellmann	11.4	X	212.57918	220.95614	216.20134	9.69528	0.0726372	0.18795016	3.0183823	17	6 24.9	16.1
2460 Mitlincoln	12.4	X	221.15385	303.77014	176.12204	3.74115	0.1096892	0.29062274	2.2572673	17	8 23.4	15.6
2461 Clavel	11.6	X	334.59039	231.84679	116.04251	2.50980	0.1668565	0.17370056	3.1812801	17	7 26.4	15.1
2462 Nehalennia	12.7	X	297.28192	53.55387	99.78337	2.98591	0.1416681	0.26367467	2.4085580	17	—	—
2463 Sterpin	11.8	X	25.30926	264.69112	178.94964	13.38400	0.1545174	0.23509560	2.5999982	17	—	—
2464 Nordenskiöld	11.8	X	19.39284	77.96524	8.61451	0.84777	0.2034368	0.17394397	3.1783116	17	—	—
2465 Wilson	12.3	X	347.41564	5.59942	293.98783	3.85329	0.0730773	0.21578262	2.7529083	17	6 16.6	15.5
2466 Golson	12.1	X	192.99921	194.94927	159.81503	5.09088	0.1644368	0.22994479	2.6386817	17	2 19.6	16.3
2467 Kollontai	12.5	X	187.14363	17.98030	309.23459	5.80048	0.1610649	0.29938495	2.2130067	17	—	—
2468 Repin	13.0	X	232.40951	98.17598	216.36303	5.72047	0.1566618	0.27772600	2.3266177	17	1 26.6	16.8
2469 Tadjikistan	12.5	X	165.63405	139.96799	151.67932	9.67696	0.1382385	0.17996411	3.1070300	17	—	—
2470 Agematsu	11.8	X	331.24615	94.79699	79.43241	3.10941	0.0092485	0.20093732	2.8868817	17	—	—
2471 Ultrajectum	11.8	X	41.21155	280.27051	16.01484	10.30070	0.0828895	0.18970966	2.9996903	17	9 11.2	15.7
2472 Bradman	13.8	X	27.56385	160.26748	344.69112	5.11166	0.0942138	0.28911592	2.2651035	17	—	—
2473 Heyerdahl	13.0	X	281.07444	230.97655	185.69116	5.19024	0.1357173	0.29369027	2.2415220	17	8 4.8	15.9
2474 Ruby	11.8	X	281.50553	14.42680	237.81603	7.52690	0.2214889	0.22437060	2.6822057	17	1 3.4	16.3
2475 Semenov	11.6	X	178.87372	179.41566	209.96603	9.08777	0.1003741	0.18544055	3.0455535	17	3 22.2	16.3
2476 Andersen	11.2	X	199.17965	265.10370	82.34336	10.81772	0.1159630	0.18728641	3.0255096	17	2 27.0	16.1
2477 Biryukov	12.4	X	313.20716	86.26418	208.22301	6.10067	0.1502225	0.24078847	2.5588545	17	4 2.5	15.8
2478 Tokai	12.1	X	103.27731	233.84878	228.79638	4.13888	0.0683062	0.29675389	2.2260681	17	2 21.3	14.5
2479 Sodankylä	13.0	X	185.16449	156.61387	314.65430	2.91488	0.1967342	0.26699564	2.3885441	17	7 6.2	16.7
2480 Papanov	13.2	X	122.33004	13.58894	35.17093	2.91803	0.1196915	0.29676971				

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2481 Bürgi	13.5 ^m	X	276.26930	318.54567	13.74071	2.25954	0.2605509	0.23882198	2.5728819	17	3 30.5	17.6
2482 Perkin	12.8	X	218.76050	2.37983	103.05821	3.13128	0.0652380	0.19682126	2.9269910	17	8 8.1	17.0
2483 Guinevere	10.9	X	4.76628	183.35734	252.03502	4.49992	0.2775984	0.12455300	3.9710003	17	—	—
2484 Parenago	13.1	X	300.05534	148.10398	204.52183	1.20024	0.2537723	0.27483747	2.3428910	17	5 15.1	16.4
2485 Scheffler	12.8	X	29.95329	351.59047	97.77623	2.76455	0.2005456	0.16962273	3.2320645	17	—	—
2486 Metsähovi	12.5	X	47.04185	101.37078	359.96850	8.41015	0.0796864	0.28852889	2.2681748	17	—	—
2487 Juhani	13.1	X	244.12797	37.78185	347.44597	2.80630	0.1837516	0.26560985	2.3968449	17	5 8.3	16.8
2488 Bryan	13.8	X	31.43729	301.17135	62.31624	6.89324	0.2250740	0.28939236	2.2636607	17	12 24.5	16.1
2489 Suvorov	12.1	X	255.84646	234.33475	56.44542	1.78443	0.1568562	0.18007653	3.1057367	17	2 9.1	17.0
2490 Bussolini	11.9	X	9.86770	210.45533	212.60469	12.96362	0.1331837	0.23385859	2.6091587	17	—	—
2491 Tvashtri	13.68	X	314.00500	357.84102	125.31076	22.86562	0.0542325	0.38304323	1.8777489	17	—	—
2492 Kutuzov	11.6	X	39.00669	268.52924	20.69202	0.82695	0.1407334	0.17285131	3.1916917	17	9 2.3	15.6
2493 Elmer	12.7	X	187.38193	147.55199	205.89795	8.73541	0.1710238	0.21155350	2.7894757	17	2 14.1	17.4
2494 Inge	10.8	X	79.87192	97.34929	283.26415	11.54111	0.0672831	0.17560312	3.1582601	17	—	—
2495 Noviomagum	15.2	X	182.33785	136.41234	199.74052	21.12576	0.1026998	0.37118710	1.9175240	17	—	—
2496 Fernandus	13.2	X	278.52317	291.76367	163.30371	0.91826	0.0335878	0.30821374	2.1705413	17	10 16.8	15.4
2497 Kulikovskij	13.1	X	343.69932	345.89551	306.95923	5.82607	0.1264817	0.24303648	2.5430510	17	5 2.0	15.8
2498 Tsesevich	11.8	X	17.23851	3.09571	331.73729	1.23487	0.0839365	0.19774749	2.9178440	17	9 22.3	15.4
2499 Brunk	12.3	X	218.51286	54.04291	192.29634	0.75401	0.1305363	0.18081476	3.0972776	17	—	—
2500 Alascattalo	12.6	X	78.86751	160.51048	48.00400	6.98991	0.0989942	0.29395224	2.2401901	17	6 30.5	15.0
2501 Lohja	12.08	X	337.61994	229.56393	10.93486	3.30358	0.1966427	0.26148254	2.4220006	17	2 11.8	15.1
2502 Nummela	11.6	X	298.96533	130.24644	14.83104	17.76800	0.2198686	0.19549717	2.9401923	17	12 13.1	15.3
2503 Liaoning	14.3	X	348.97480	16.18494	11.89455	7.10767	0.2136706	0.30363133	2.923253	17	10 29.5	15.3
2504 Gaviola	11.9	X	47.97430	161.27421	10.02036	4.07372	0.0888542	0.21473275	2.7618740	17	3 28.6	14.9
2505 Hebei	11.6	X	273.59748	207.36990	59.23736	2.07956	0.1742263	0.17698890	3.1417530	17	1 27.5	16.5
2506 Pirogov	11.9	X	14.14741	283.36046	164.87446	2.16533	0.0190115	0.19963818	2.8993923	17	—	—
2507 Bobone	11.7	X	86.33226	99.44909	129.95922	10.31930	0.0817733	0.21258970	2.7804040	17	8 13.9	15.5
2508 Alupka	13.1	X	286.45913	119.04576	191.49004	6.08125	0.1273442	0.27037146	2.3686205	17	3 20.0	16.3
2509 Chukotka	12.8	X	133.68105	348.66365	343.59566	2.85219	0.1947207	0.25624132	2.4549158	17	—	—
2510 Shandong	12.60	X	113.58319	209.80499	102.90841	5.26490	0.1963951	0.29142525	2.2531214	17	—	—
2511 Patterson	12.6	X	227.77113	190.45378	85.54926	8.04652	0.1041133	0.28288755	2.2982300	17	—	—
2512 Tavastia	12.5	X	111.00026	15.01537	69.52716	6.37924	0.1205777	0.29309469	2.2445576	17	2 21.9	14.8
2513 Baetslé	13.4	X	138.25699	97.78894	257.61448	3.16180	0.1813460	0.28518247	2.2858839	17	—	—
2514 Taiyuan	12.7	X	97.81655	12.64907	358.62878	2.34119	0.1011770	0.22849024	2.6498682	17	—	—
2515 Gansu	12.6	X	108.36431	353.39493	55.53237	4.03099	0.1889175	0.17300034	3.1898584	17	2 14.3	17.0
2516 Roman	13.6	X	109.10200	313.62881	123.39591	1.09341	0.1642154	0.28619641	2.2804817	17	2 13.7	15.8
2517 Orma	11.9	X	228.45651	299.21100	71.86993	2.63237	0.1729314	0.17311595	3.1884381	17	4 19.7	17.0
2518 Rutlant	13.3	X	95.27549	38.72881	205.58417	5.92605	0.1728154	0.28095074	2.3087803	17	9 26.5	16.3
2519 Annagerman	11.5	X	240.08166	225.78099	83.83879	2.42116	0.1699254	0.17676428	3.1444139	17	2 17.2	16.6
2520 Novorossiysk	11.8	X	199.46195	315.50231	6.76793	6.23792	0.0961578	0.18018056	3.1045412	17	1 27.1	16.6
2521 Heidi	11.7	X	87.03266	247.23586	281.24938	7.72353	0.0937739	0.21130120	2.7916957	17	5 24.7	15.4
2522 Triglav	11.3	X	188.39486	237.66302	272.77987	8.75914	0.0557123	0.18800511	3.0177941	17	8 26.5	15.9
2523 Ryba	11.2	X	139.60796	278.12758	282.74843	8.88703	0.0366634	0.18803842	3.0174378	17	9 1.8	15.7
2524 Budovicium	11.2	X	231.05862	19.96326	278.70377	0.28966	0.1594363	0.17936022	3.1140002	17	1 27.2	16.1
2525 O'Steen	11.0	X	179.52221	285.17277	86.92641	2.77056	0.1810510	0.17612813	3.1519808	17	3 11.4	16.1
2526 Alisary	12.4	X	59.74543	63.04564	16.40319	3.27696	0.1681170	0.17654851	3.1469754	17	1 3.9	16.0
2527 Gregory	13.2	X	98.33716	177.67073	186.28896	2.61619	0.1865026	0.25470779	2.4647596	17	—	—
2528 Mohler	12.2	X	189.42647	182.27473	162.62754	0.51017	0.1749969	0.17667965	3.1454180	17	2 14.8	17.4
2529 Rockwell Kent	12.9	X	350.67658	116.41819	207.09864	4.41203	0.0941273	0.24436637	2.5338161	17	7 20.8	15.7
2530 Shipka	12.2	X	124.14174	155.41692	198.71052	10.10689	0.1278550	0.18821258	3.0155760	17	—	—
2531 Cambridge	10.9	X	199.24538	32.38934	104.35866	11.03203	0.0565742	0.18887372	3.0085347	17	8 29.1	15.4
2532 Sutton	13.0	X	49.89802	8.43674	345.15388	4.33875	0.1719952	0.26969283	2.3725923	17	12 25.6	15.9
2533 Fechtig	11.8	X	169.83910	224.84774	201.18043	1.57686	0.1677222	0.18064017	3.0992729	17	5 2.8	16.8
2534 Houzeau	11.4	X	163.11062	200.75393	167.92369	0.80944	0.1723969	0.17656496	3.1467800	17	2 19.2	16.3
2535 Hämeenlinna	12.3	X	185.25622	308.87993	172.80176	3.42854	0.0802715	0.29409671	2.2394563	17	7 15.6	15.4
2536 Kozyrev	12.4	X	77.54154	90.47602	275.14614	4.86605	0.2285183	0.28153563	2.3055815	17	—	—
2537 Gilmore	12.7	X	81.21688	18.78557	334.98906	12.93658	0.1721101	0.22770979	2.6559196	17	—	—
2538 Vanderlinden	13.2	X	241.70400	28.87398	50.33743	4.76696	0.1304926	0.29420342	2.2389148	17	7 21.4	16.3
2539 Ningxia	14.4	X	174.16703	215.44947	193.30769	3.97950	0.1685309	0.28952210	2.2629844	17	3 31.5	17.6
2540 Blok	13.0	X	325.97926	261.08172	183.51830	1.26583	0.0514236	0.30273328	2.1966588	17	12 12.4	15.3
2541 Edebono	11.9	X	43.85629	327.29683	77.03370	3.20004	0.0814270	0.19602295	2.9349324	17	—	—
2542 Calpurnia	11.6	X	248.88317	47.92956	145.70975	4.62069	0.0738938	0.17789682	3.1310542	17	12 26.0	16.0
2543 Machado	11.0	X	254.04721	286.16915	40.90320	15.04881	0.2844777	0.18061537	3.0995567	17	3 19.7	16.6
2544 Gubarev	12.0	X	130.36038	262.04702	305.50521	22.51068	0.2405358	0.26949048	2.3737798	17	9 9.2	16.3
2545 Verbiest	12.6	X	194.54007	106.32546	322.64912	5.96751	0.1261206	0.29617941	2.2289456	17	5 13.1	15.9
2546 Libitina	11.9	X	26.62691	234.91405	315.16136	10.32440	0.1923544	0.23501884	2.6005643	17	3 3.2	14.4
2547 Hubei	13.5	X	139.07567	16.56397	348.42140	6.19664	0.1292120	0.26759312	2.3849874	17	—	—
2548 Leloir	12.0	X	287.89414	292.01345	299.50144	18.14692	0.1029418	0.23080370	2.6321313	17	—	—
2549 Baker	12.6	X	64.80886	203.24625	193.94645	0.06649	0.1767513	0.17279940	3.1923309	17	—	—
2550 Houssay	11.5	X	52.48065	242.98475	158.50578	10.39359	0.1714852	0.17286219	3.1915578	17	—	—
2551 Decabrina	12.5	X	139.27005	32.07031	10.34288	0.62659	0.1709535	0.17562015	3.1580560	17	3 8.1	17.1
2552 Remek	14.3	X	161.47911	343.86828	343.47322	0.90175	0.1890236	0.31343360	2.1463754	17	—	—
2553 Viljev	11.4	X	229.59538	248.52660	120.03092	5.24666	0.0463568	0.18152518	3.0891913	17	4 23.9	16.0
2554 Skiff	12.7	X	359.43329	333.71435	296.37874	4.85984	0.1449233	0.28943541	2.2634363	17	4 29.9	14.8
2555 Thomas	11.9	X	188.22526	89.32075	283.19457	0.89847	0.0809761	0.20239313	2.8730215	17	3 8.8	16.1
2556 Louise	13.2	X	201.27282	345.47055	126.47547	2.78849	0.0371489	0.30992633	2.1625379	17	7 21.7	15.7
2557 Putnam	12.6	X	346.40743	189.77687	188.25177	6.06840	0.1562649	0.27360575	2.3499172	17	10 3.9	14.5
2558 Viv	13.5	X	353.39501	282.49607	46.13347	5.15246	0.1555399	0.29880828	2.2158531	17	7 28.5	15.1
2559 Svoboda	12.3	X	216.93281	88.06147	350.22698	8.88818	0.1546386	0.21189890	2.7864435	17	6 27.2	16.9
2560 Siegm	11.9	X	355.67160	281.97175	148.42349	5.93649	0.0354612	0.21611953	2.7500465	17	12 23.3	15.5

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2561 Margolin	13.5 ^m	X	181.23495	276.13954	166.16652	2.48519	0.1382394	0.25993132	2.4316271	17	5 24.4	17.2
2562 Chaliapin	11.4	X	157.31609	238.74742	339.86244	10.26196	0.0417104	0.18868757	3.0105131	17	10 14.8	15.9
2563 Boyarchuk	11.6	X	59.91436	40.58174	114.58550	2.04133	0.1437878	0.17256002	3.1952826	17	4 11.7	15.4
2564 Kayala	13.2	X	258.32714	295.26992	153.52564	1.96283	0.1093182	0.29455183	2.2371489	17	8 26.1	15.7
2565 Grögler	14.2	X	9.83495	36.12282	343.99404	2.03355	0.2356824	0.27245414	2.3565344	17	12 7.9	16.0
2566 Kirghizia	12.4	X	72.45478	79.32287	51.67066	5.07940	0.0780775	0.25692819	2.4505386	17	3 2.6	15.1
2567 Elba	11.8	X	104.08896	191.67197	142.61664	8.91384	0.1418777	0.21776130	2.7362068	17	—	—
2568 Maksutov	13.3	X	89.37271	195.09613	87.54214	8.03212	0.1879202	0.30094896	2.2053329	17	11 16.0	16.3
2569 Madeline	11.0	X	188.07814	313.86946	76.25868	11.48556	0.1616775	0.23124195	2.6288046	17	4 4.9	15.4
2570 Porphyro	12.1	X	304.78118	96.79706	324.36420	16.24181	0.1076645	0.21428311	2.7657362	17	9 15.9	15.7
2571 Geisei	12.9	X	317.68977	284.78454	66.91503	2.87227	0.1942056	0.29636778	2.2280010	17	6 14.1	15.3
2572 Annschnell	13.2	X	8.01662	51.59243	200.48028	5.14077	0.1466988	0.26656711	2.3911033	17	4 27.3	15.2
2573 Hannu Olavi	11.5	X	90.36729	147.92751	54.11009	12.96902	0.1061851	0.18834906	3.0141191	17	7 20.5	15.9
2574 Ladoga	11.7	X	121.00908	308.36363	22.21419	2.10887	0.0735381	0.20490140	2.8495269	17	—	—
2575 Bulgaria	12.6	X	79.66631	287.29099	321.98927	4.67373	0.1230163	0.29396954	2.2401022	17	9 5.3	15.0
2576 Yesenin	11.3	X	346.46491	5.66891	311.14859	12.13744	0.1263023	0.18138120	3.0908259	17	7 9.7	15.0
2577 Litva	13.18	X	116.54112	284.03748	182.59983	22.90817	0.1378520	0.37498987	1.9045074	17	3 8.8	14.4
2578 Saint-Exupéry	11.5	X	17.25460	336.24837	55.70366	10.57117	0.0971634	0.18950858	3.0018118	17	12 5.2	15.2
2579 Spartacus	13.4	X	138.33930	334.03593	280.94999	5.77495	0.0745215	0.29988110	2.2105652	17	11 20.8	16.4
2580 Smilevskia	13.0	X	139.24715	221.68312	119.35828	1.61428	0.1959005	0.30577518	2.1820661	17	—	—
2581 Radegast	13.0	X	329.82053	192.61437	260.60140	2.49259	0.0979376	0.29472670	2.2362639	17	12 30.3	15.0
2582 Harimaya-Bashi	10.4	X	205.96153	236.78692	56.31449	18.15153	0.0654847	0.17221949	3.1994931	17	—	—
2583 Fatyanov	13.0	X	178.24695	310.24342	47.11910	6.88024	0.2100050	0.29159095	2.2522678	17	2 3.6	16.4
2584 Turkmenia	13.0	X	103.90191	239.00987	50.03756	1.43748	0.0656035	0.29635119	2.2280842	17	11 25.2	15.6
2585 Irpedina	12.1	X	341.78567	247.20893	136.57317	5.98377	0.1368803	0.26095113	2.4252877	17	9 29.7	13.6
2586 Matson	13.0	X	337.85582	153.93747	166.56805	4.36137	0.0887443	0.26732821	2.3865627	17	6 22.9	15.6
2587 Gardner	11.5	X	255.52519	184.25740	87.76474	2.63153	0.1565446	0.17509691	3.1643443	17	1 19.1	16.5
2588 Flavia	13.3	X	151.24817	95.48935	242.77135	2.26278	0.2127231	0.25604871	2.4561468	17	—	—
2589 Daniel	12.3	X	256.57684	208.19057	148.92097	2.62177	0.0802731	0.20158133	2.8807297	17	5 3.2	16.5
2590 Mourão	12.4	X	355.72283	165.84003	223.68241	6.13590	0.1185334	0.27489442	2.3425674	17	11 10.1	14.5
2591 Dworetzky	11.5	X	236.93619	273.52263	356.26088	1.54308	0.0421895	0.19577375	2.9374225	17	—	—
2592 Hunan	12.1	X	60.69655	6.89461	204.53792	1.33721	0.1240332	0.17901356	3.1180191	17	6 21.9	16.0
2593 Buryatia	13.9	X	46.79615	76.24302	63.73996	0.21401	0.0793220	0.30833481	2.1699731	17	1 9.4	15.7
2594 Acamas	11.8	X	224.69914	279.24808	356.69787	5.53371	0.0846747	0.08653800	5.0621087	17	1 18.4	18.9
2595 Gudiachvili	12.2	X	287.79713	277.87353	148.42110	9.87394	0.1463614	0.21211938	2.7845123	17	8 30.2	15.8
2596 Vainu Bappu	13.0	X	329.16000	251.92946	138.87976	10.24982	0.0720396	0.18677556	3.0310239	17	9 25.5	17.0
2597 Arthur	11.9	X	353.14317	274.54130	120.45357	1.09274	0.1568522	0.18937483	3.0032251	17	11 4.5	15.0
2598 Merlin	13.1	X	297.39408	217.27546	197.76787	7.77673	0.2176390	0.21253376	2.7808919	17	8 14.1	16.9
2599 Veseli	11.5	X	75.09488	341.86300	353.37191	15.36459	0.1662074	0.24434745	2.5339469	17	12 29.2	15.5
2600 Lumme	11.6	X	96.70695	215.21709	95.38917	11.72432	0.0924457	0.18845785	3.0129590	17	12 7.3	16.0
2601 Bologna	11.4	X	177.52093	193.90979	288.17673	9.58776	0.0651464	0.17830921	3.1262247	17	7 14.1	16.1
2602 Moore	12.7	X	160.53887	65.26885	158.26325	5.54272	0.1071038	0.26766217	2.3845772	17	11 5.2	16.2
2603 Taylor	12.3	X	67.39379	282.06551	37.77865	3.05065	0.0435390	0.21253860	2.7808497	17	11 8.4	16.0
2604 Marshak	12.9	X	97.93616	134.62249	122.96187	14.83957	0.2330163	0.26715261	2.3876084	17	10 30.9	16.8
2605 Sahade	12.4	X	308.50717	181.95771	171.82340	9.42748	0.0766149	0.18122633	3.0925865	17	7 4.5	16.8
2606 Odessa	11.7	X	7.77953	353.23521	197.31364	12.45297	0.2647789	0.21499242	2.7596497	17	1 22.4	14.9
2607 Yakutia	13.6	X	325.11474	336.60288	359.75377	2.09155	0.2266192	0.26901921	2.3765513	17	5 31.7	16.1
2608 Seneca	17.52	X	353.11609	37.35035	167.36812	14.68183	0.5715806	0.24705250	2.5154163	17	—	—
2609 Kiril-Metodi	12.9	X	60.84971	245.09369	303.84786	5.71748	0.0877530	0.29770839	2.2213074	17	4 21.3	15.1
2610 Tuva	13.3	X	203.72216	40.02328	205.39404	0.67245	0.0986192	0.31063888	2.1592297	17	—	—
2611 Boyce	12.4	X	330.32112	141.78575	72.09955	3.32516	0.0582678	0.18589742	3.0405617	17	2 9.2	16.5
2612 Kathryn	11.1	X	315.66522	359.37191	132.75966	20.16474	0.1610452	0.19970927	2.8987042	17	—	—
2613 Plzeň	11.4	X	310.55749	192.10947	277.58306	13.01674	0.0454049	0.18587267	3.0408315	17	12 6.9	15.5
2614 Torrence	13.0	X	88.76575	228.30427	105.54025	6.91370	0.1681615	0.27564672	2.3383032	17	—	—
2615 Saito	12.5	X	286.21558	343.14414	322.73913	4.24526	0.1524789	0.17371103	3.1811523	17	3 27.3	17.4
2616 Lesya	12.4	X	274.85168	201.36041	146.75039	1.44427	0.0761324	0.30997913	2.1622924	17	4 26.6	15.1
2617 Jiangxi	10.3	X	157.67428	349.71799	73.25715	12.94370	0.2339199	0.17529920	3.1619094	17	4 27.4	15.7
2618 Coonabarabran	12.3	X	38.08046	77.50172	281.28625	9.22736	0.1182060	0.18754221	3.0227579	17	11 25.9	16.2
2619 Skalná Pleso	12.7	X	130.69479	70.53674	204.34301	1.12081	0.0418853	0.18874627	3.0098889	17	11 26.3	17.0
2620 Santana	12.7	X	221.77292	316.86162	72.93934	3.08813	0.0714088	0.20388081	2.8590285	17	5 5.7	17.0
2621 Goto	10.9	X	52.97627	272.63384	95.74558	13.04355	0.1756206	0.18223079	3.0812117	17	—	—
2622 Bolzano	11.8	X	145.77502	217.11984	134.70365	11.00834	0.1022802	0.18953896	3.0014910	17	1 2.9	16.2
2623 Zech	13.2	X	324.18039	22.88250	349.11198	4.05484	0.2351555	0.29115998	2.2544897	17	7 23.1	15.1
2624 Samitchev	10.8	X	46.83427	138.34338	161.55495	2.79649	0.1175105	0.12557416	3.9494431	17	9 23.9	16.1
2625 Jack London	13.3	X	194.87377	170.76013	128.75860	4.46046	0.1415853	0.30296288	2.1955489	17	—	—
2626 Belnika	11.7	X	262.29605	118.95945	355.82907	1.48925	0.0248566	0.20478792	2.8505795	17	10 15.9	15.5
2627 Churyumov	12.1	X	335.67951	314.54879	109.59862	2.49994	0.1758376	0.17986561	3.1081643	17	11 9.5	15.5
2628 Kopal	12.6	X	206.65352	147.24847	206.52844	1.33753	0.1488724	0.19835901	2.9118439	17	3 7.2	17.4
2629 Rudra	15.0	X	100.71456	280.66689	343.46540	23.44055	0.2289701	0.42924990	1.7404541	17	10 31.6	17.9
2630 Hermod	11.9	X	291.08433	24.19631	2.84935	1.91505	0.1254751	0.18295690	3.0730540	17	7 17.9	16.0
2631 Zhejiang	11.9	X	299.25398	19.30555	24.75445	9.58303	0.1618202	0.21073087	2.7967305	17	8 18.1	15.6
2632 Guizhou	11.5	X	46.96901	312.20895	18.28922	10.45224	0.1086966	0.18603342	3.0390795	17	10 31.3	15.6
2633 Bishop	12.9	X	15.83735	266.66796	62.40686	3.12711	0.1386300	0.29698558	2.2249101	17	9 20.9	14.6
2634 James Bradley	10.5	X	220.93733	334.42412	133.37098	6.42135	0.0491434	0.15326565	3.4581155	17	8 15.7	15.4
2635 Huggins	12.7	X	219.79604	271.13727	276.94141	4.16646	0.0783949	0.29560398	2.2318373	17	11 26.9	15.5
2636 Lassell	11.6	X	212.56525	153.91084	98.52022	10.47305	0.0775292	0.18933474	3.0036490	17	—	—
2637 Bobrovnikoff	13.0	X	343.76865	343.65426	356.12789	4.93149	0.2346798	0.29108301	2.2548871	17	7 12.9	14.5
2638 Gadolin	11.8	X	348.60839	172.05998	245.86270	14.35361	0.0830557	0.24136534	2.5547757	17	12 2.2	14.7
2639 Planman	13.1	X	51.43482	167.02835	79.13874	9.66816	0.1928511	0.25786704	2.4445870	17	7 31.2	15.5
2640 Hållström	12.9	X	194.60097	191.90786	4.516							

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2641 Lipschutz	12.7 ^m	X	240.72281 ^o	164.87918 ^o	27.67653 ^o	9.02749 ^o	0.1338226	0.26879311	2.3778838	17	12 17.8	15.9
2642 Vésale	12.7	X	282.36924	165.73515	201.17025	14.49529	0.1838822	0.26086192	2.4258406	17	5 26.1	16.4
2643 Bernhard	14.2	X	326.58268	65.62993	348.57203	22.95408	0.2753463	0.26883955	2.3776099	17	9 24.7	15.8
2644 Victor Jara	13.4	X	309.08476	309.30355	347.62510	2.68108	0.1653330	0.30821703	2.1705258	17	3 16.3	16.3
2645 Daphne Plane	12.2	X	324.16928	79.34904	349.84342	13.78754	0.1063189	0.26646753	2.3916990	17	11 2.3	15.0
2646 Abetti	11.3	X	54.20338	37.85663	352.39665	9.66494	0.0979525	0.18853709	3.0121148	17	—	—
2647 Sova	12.6	X	318.04279	122.34795	290.60187	3.93582	0.1377518	0.29322541	2.2438904	17	9 29.7	14.6
2648 Owa	13.0	X	313.90134	131.34584	279.91739	4.79654	0.1749468	0.29201134	2.2501056	17	9 12.2	15.2
2649 Ongaq	11.9	X	220.87966	169.89504	245.24888	12.20621	0.1420321	0.23156065	2.6263920	17	5 30.8	16.0
2650 Elinor	11.1	X	231.05241	23.26649	332.43167	13.92219	0.1969394	0.23001331	2.6381576	17	3 21.1	15.7
2651 Karen	11.8	X	35.22351	276.58293	126.38716	17.76973	0.3280145	0.19152793	2.9806751	17	—	—
2652 Yabuuti	12.7	X	221.72791	294.21972	64.45438	6.99517	0.0823636	0.23002836	2.6380426	17	3 26.1	16.7
2653 Principia	12.1	X	199.12610	316.35842	194.51393	4.74807	0.0800309	0.25796934	2.4439406	17	9 10.7	15.6
2654 Ristenpart	12.8	X	137.93029	39.26780	206.43637	7.43361	0.0922009	0.18493461	3.0511057	17	11 2.5	17.5
2655 Guangxi	11.5	X	173.24131	353.34433	87.82203	17.18561	0.1628511	0.17313690	3.1881809	17	5 27.0	16.7
2656 Evenkia	13.2	X	160.69338	75.20348	95.95295	3.19865	0.0797387	0.29094711	2.2555893	17	8 26.9	16.1
2657 Bashkiria	12.1	X	199.90312	13.67701	50.21479	2.24384	0.1578005	0.17444411	3.1722337	17	5 26.9	17.4
2658 Gingerich	12.4	X	339.09415	321.80468	214.03079	9.50172	0.2893635	0.18362850	3.0655565	17	—	—
2659 Millis	11.6	X	307.91537	329.55242	157.22365	1.32136	0.1038914	0.17804841	3.1292769	17	12 18.1	15.5
2660 Wasserman	11.9	X	40.07523	86.75766	203.86255	12.33746	0.1679451	0.23248028	2.6194612	17	9 5.9	14.9
2661 Bydžovský	11.4	X	358.62396	115.54906	321.13689	9.93245	0.0938836	0.18721856	3.0262405	17	—	—
2662 Kandinsky	13.9	X	286.29407	99.99857	339.51334	2.91318	0.1588295	0.25868199	2.4394500	17	9 12.5	16.9
2663 Miltiades	13.6	X	284.15796	82.07036	28.52126	6.22194	0.1385101	0.29516786	2.2340352	17	10 29.4	15.8
2664 Everhart	14.0	X	200.31468	206.76361	167.72912	3.25927	0.1816041	0.26809802	2.3819921	17	3 17.3	17.9
2665 Schrutka	13.0	X	179.49325	288.54891	275.92934	4.78869	0.0847399	0.29247528	2.2477255	17	10 30.1	16.2
2666 Gramme	11.5	X	204.18528	207.89131	200.47600	13.44716	0.2239905	0.17392218	3.1785770	17	5 13.1	17.0
2667 Oikawa	11.9	X	255.97053	306.67917	60.07683	2.23847	0.1880438	0.17002821	3.2269239	17	5 7.7	16.9
2668 Tataria	13.4	X	205.44874	62.67258	298.11444	3.15375	0.0778318	0.27934662	2.3176104	17	2 24.4	16.7
2669 Shostakovich	13.0	X	321.21496	95.87834	292.40932	7.79038	0.2204077	0.21280566	2.7785226	17	8 15.6	16.0
2670 Chuvashia	11.0	X	286.83348	168.12628	284.90897	9.85455	0.0738268	0.17454870	3.1709664	17	10 6.7	15.5
2671 Abkhazia	13.0	X	149.22806	156.32743	228.09120	1.47892	0.1196854	0.23383329	2.6093469	17	2 5.9	16.7
2672 Písek	12.3	X	358.05189	152.32307	129.01565	14.13970	0.1482391	0.23333877	2.6130323	17	6 2.4	15.3
2673 Lossignol	12.4	X	149.76018	178.86307	71.38551	2.27745	0.1507383	0.17150068	3.2084269	17	11 20.0	17.6
2674 Pandarus	9.1	X	294.87146	39.37037	179.81414	1.85489	0.0683529	0.08359745	5.1801306	17	1 27.5	15.9
2675 Tolkien	12.2	X	96.70988	1.79527	5.90412	2.75347	0.1021723	0.29947639	2.2125563	17	—	—
2676 Aarhus	12.8	X	191.86676	45.61418	289.65728	4.55671	0.1275830	0.26458174	2.4030500	17	1 16.1	16.4
2677 Joan	11.5	X	289.66602	21.08641	194.75323	10.10565	0.0510651	0.19053733	2.9909971	17	—	—
2678 Aavasaksa	12.6	X	204.07685	45.84478	54.03246	3.44461	0.0866859	0.29020579	2.2594288	17	7 8.7	15.6
2679 Kittisvaara	12.0	X	30.16886	281.52881	208.20636	10.10213	0.1000588	0.23220602	2.6215234	17	—	—
2680 Mateo	13.0	X	70.68074	336.86950	3.02748	2.43345	0.2149020	0.26455772	2.4031954	17	—	—
2681 Ostrovskij	12.3	X	341.04467	61.07597	66.81423	3.98257	0.1895978	0.21640706	2.7476101	17	—	—
2682 Soromundi	13.3	X	43.43168	183.25771	127.26799	5.49421	0.1697027	0.28807285	2.2705679	17	10 21.1	15.6
2683 Brian	11.8	X	252.67727	17.95300	342.21784	1.48082	0.0571463	0.19791226	2.9162243	17	5 3.9	16.1
2684 Douglas	11.6	X	185.06300	112.56270	150.76935	9.92014	0.0455193	0.18510927	3.0491861	17	—	—
2685 Masursky	12.2	X	7.20731	288.37118	215.36281	12.12859	0.1095314	0.23940499	2.5687031	17	—	—
2686 Linda Susan	11.7	X	49.87953	289.98676	225.68740	9.32535	0.0535947	0.18912390	3.0058809	17	3 12.0	15.8
2687 Tortali	11.89	X	219.21636	255.36774	49.73730	10.08514	0.1251599	0.24666385	2.5180579	17	1 11.6	15.9
2688 Halley	11.7	X	58.53512	188.32004	95.24591	3.44925	0.1432983	0.17458126	3.1705721	17	9 26.3	15.8
2689 Bruxelles	13.3	X	222.69497	11.05920	190.62802	5.50902	0.1180525	0.29547924	2.2324654	17	12 14.3	16.2
2690 Ristiina	11.3	X	136.00784	260.60587	136.25369	11.43378	0.1122853	0.18616496	3.0376478	17	2 17.6	15.6
2691 Sersic	13.2	X	312.66791	277.13634	319.88248	3.59377	0.1127453	0.29308828	2.2445903	17	1 10.1	16.1
2692 Chkalov	11.9	X	228.98646	299.00200	236.38185	9.28844	0.1811764	0.23735172	2.5834960	17	11 4.2	15.7
2693 Yan'an	13.0	X	308.48747	346.24375	59.80348	7.30618	0.1815142	0.29416762	2.2390964	17	8 30.9	15.2
2694 Pino Torinese	13.4	X	27.51543	343.60386	249.92074	1.59311	0.1046020	0.28110282	2.3079475	17	5 5.7	15.6
2695 Christabel	11.9	X	218.44685	288.59366	63.00523	14.88540	0.0761419	0.22074064	2.7115307	17	3 20.3	16.2
2696 Magion	12.2	X	344.17731	283.28309	186.23411	25.35034	0.1138573	0.25699138	2.4501369	17	—	—
2697 Albina	10.6	X	14.29802	132.10813	270.95505	3.58107	0.0791685	0.14662266	3.5617928	17	12 8.1	15.3
2698 Azerbajdzhan	12.2	X	137.84374	242.78221	206.48558	6.89668	0.0529431	0.22676436	2.6632965	17	4 8.8	15.7
2699 Kalinin	11.6	X	238.48750	295.11972	63.99199	16.13910	0.1675001	0.22966994	2.6407864	17	4 13.5	16.1
2700 Baikonur	12.0	X	82.91713	274.14505	171.36969	2.40672	0.0407818	0.19879161	2.9076180	17	1 27.4	15.7
2701 Cherson	12.5	X	0.12883	292.51692	13.62968	6.28784	0.1314582	0.17381487	3.1798852	17	7 19.8	16.3
2702 Batrakov	11.7	X	194.34281	323.33127	243.19075	1.61545	0.1004192	0.15648663	3.4104987	17	11 9.3	17.0
2703 Rodari	13.4	X	281.67697	171.37187	49.43502	6.03231	0.0569009	0.30344166	2.1932387	17	—	—
2704 Julian Loewe	12.7	X	329.42521	252.56368	207.35516	4.51894	0.0961176	0.26757657	2.3850857	17	—	—
2705 Wu	13.2	X	160.69957	334.63913	8.32326	4.52544	0.1603180	0.30419395	2.1896213	17	—	—
2706 Borovský	11.7	X	278.90507	94.85215	50.86889	10.85221	0.0368398	0.18776469	3.0203697	17	12 10.3	15.9
2707 Ueferji	11.7	X	50.73432	342.56272	79.60001	2.67284	0.1250009	0.17301049	3.1897336	17	—	—
2708 Burns	12.1	X	191.22684	331.26670	111.65076	2.78278	0.1773348	0.18230324	3.0803953	17	6 10.9	17.2
2709 Sagan	13.0	X	319.11096	308.48163	241.12872	2.73184	0.0693987	0.30303714	2.1951901	17	—	—
2710 Veverka	13.3	X	153.51662	34.24797	144.46442	3.11220	0.1303752	0.26106284	2.4245958	17	8 30.9	16.9
2711 Aleksandrov	11.8	X	160.21716	204.13149	157.82981	10.27716	0.0979007	0.18909446	3.0061929	17	1 29.3	16.3
2712 Keaton	13.6	X	348.57515	334.65837	169.87339	0.81995	0.0363527	0.31009761	2.1617415	17	—	—
2713 Luxembourg	11.4	X	49.05125	297.84984	339.65641	1.35006	0.0225116	0.20437158	2.8544496	17	8 18.1	15.1
2714 Matti	12.8	X	163.72615	144.71462	134.16142	6.09687	0.2052362	0.29320563	2.2439914	17	—	—
2715 Mielikki	11.4	X	200.04567	143.85298	200.67178	6.74995	0.1516603	0.21777213	2.7361161	17	2 13.5	15.9
2716 Tuulikki	13.1	X	132.03199	163.70345	218.44792	5.95199	0.1063642	0.27030610	2.3690023	17	—	—
2717 Tellervo	12.2	X	172.57176	163.53452	164.86471	3.28563	0.2186305	0.29914478	2.2141911	17	—	—
2718 Handley	11.8	X	12.70368	265.46816	44.50773	1.49281	0.1545947	0.17888935	3.1194622	17	8 16.3	15.1
2719 Suzhou	13.0	X	307.65752	320.83960	125.64922	0.62424	0.1231850	0.30448850	2.1882089	17	11 7.9	14.8
2720 Pyotr Pervyj	14.1	X	236.22323	236.34732	113.44339	3.28848	0.2033137	0.27685031	2.3315212	17		

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2721 Vsekhsvyatskij	12.2	X	199.19580	282.13349	84.85723	2.23037	0.1708823	0.16842774	3.2473341	17	3 22.4	17.5
2722 Abalakin	12.2	X	55.90408	111.29849	133.55877	1.67701	0.1413633	0.17173522	3.2055050	17	8 1.0	16.3
2723 Gorshkov	13.0	X	353.24910	227.58132	153.07711	2.08085	0.1996437	0.17897467	3.1184707	17	10 15.8	16.0
2724 Orlov	11.5	X	349.34783	143.73344	153.66018	3.98137	0.1197485	0.19703395	2.9248841	17	6 15.1	15.1
2725 David Bender	10.8	X	105.16040	28.25851	61.55458	15.54370	0.1481535	0.18594103	3.0400861	17	3 30.1	15.2
2726 Kotelnikov	12.2	X	278.92435	47.71285	355.70959	1.55829	0.0754333	0.20396214	2.8582684	17	7 29.9	16.0
2727 Paton	12.2	X	264.10021	279.37928	202.30427	3.50909	0.1026149	0.23372811	2.6101297	17	10 17.7	15.6
2728 Yatskiv	12.7	X	6.41403	97.09778	201.30074	2.60786	0.1657443	0.25595861	2.4567231	17	7 8.6	14.7
2729 Urumqi	11.5	X	304.06230	266.37737	64.05036	3.17097	0.0668861	0.20081917	2.8880138	17	5 28.5	15.2
2730 Barks	11.7	X	70.61684	273.09356	4.67370	6.42941	0.1296953	0.21956785	2.7211776	17	10 2.5	15.3
2731 Cucula	10.8	X	39.78790	132.93403	150.69409	13.34808	0.1888850	0.17304095	3.1893594	17	9 3.0	14.6
2732 Witt	11.8	X	86.89804	275.18906	145.08720	6.49375	0.0235512	0.21501081	2.7594923	17	—	—
2733 Hamina	12.8	X	77.75589	353.43575	121.51768	10.40754	0.1368237	0.27404166	2.3474246	17	2 14.5	14.9
2734 Hašek	11.7	X	156.84342	141.15719	36.98530	16.54504	0.0172809	0.17527551	3.1621944	17	9 5.9	16.5
2735 Ellen	14.32	X	244.04736	59.72582	344.59018	23.05397	0.0549806	0.38952375	1.8568640	17	5 18.3	17.0
2736 Ops	13.1	X	353.14341	65.09296	255.50049	7.46039	0.0847381	0.28434176	2.2903874	17	7 17.7	15.3
2737 Kotka	11.8	X	228.83611	105.50693	339.45871	8.82545	0.1958432	0.21670919	2.7450558	17	7 15.4	16.4
2738 Viracocha	12.5	X	78.81952	266.12136	290.69849	1.11444	0.1149298	0.21989273	2.7184966	17	6 23.7	15.9
2739 Taguacipa	13.3	X	26.39446	36.42520	267.36418	1.16709	0.1286337	0.25592855	2.4569155	17	8 28.7	15.6
2740 Tsoj	11.4	X	177.89801	96.31781	197.88429	9.37451	0.0712623	0.18968957	2.9999021	17	—	—
2741 Valdivia	11.9	X	142.32230	91.47973	151.12600	10.28746	0.1817352	0.23382490	2.6094093	17	11 12.5	16.4
2742 Gibson	11.9	X	290.06121	287.41469	122.77654	3.16203	0.0674449	0.19862946	2.9092002	17	8 24.4	15.9
2743 Chengdu	12.2	X	17.75660	137.36160	252.77650	12.29925	0.155476	0.22801501	2.6535489	17	12 19.1	15.1
2744 Birgitta	14.78	X	2.27660	44.11175	315.55489	6.74271	0.3324995	0.28222368	2.3018327	17	10 24.7	15.5
2745 San Martín	13.2	X	234.75445	303.80364	137.77410	22.39865	0.1903703	0.28476487	2.2881181	17	7 12.1	17.0
2746 Hissao	13.1	X	334.69860	322.34524	177.20487	3.97709	0.0841975	0.29245171	2.2478463	17	—	—
2747 Český Krumlov	11.8	X	183.39722	302.03059	344.88197	5.81828	0.1285380	0.18077200	3.0977660	17	—	—
2748 Patrick Gene	12.4	X	161.14388	347.74150	350.43734	4.22371	0.1358778	0.20984839	2.8045657	17	1 2.6	16.6
2749 Waltherhorn	12.5	X	2.18269	75.06857	354.76173	0.32095	0.1669832	0.17362553	3.1821965	17	—	—
2750 Lovisa	13.2	X	91.86183	82.38076	45.78567	5.17350	0.0752358	0.29943793	2.2127457	17	3 17.6	15.5
2751 Campbell	13.0	X	191.78423	201.64580	246.28956	1.49014	0.1738010	0.26405529	2.4062429	17	6 11.4	16.8
2752 Wu Chien-Shiung	11.5	X	302.86298	198.88304	186.30464	10.13199	0.1108231	0.18755970	3.0225700	17	7 30.8	15.7
2753 Duncan	12.4	X	53.06415	127.84865	344.58191	6.86278	0.0355332	0.21147857	2.7901345	17	1 19.0	16.0
2754 Efimov	13.6	X	100.35118	91.09744	275.16762	5.70962	0.2329842	0.29647988	2.2274394	17	—	—
2755 Avicenna	13.2	X	42.46312	149.29882	232.35290	4.56913	0.2586847	0.20525362	2.8462661	17	—	—
2756 Dzhangar	13.3	X	184.68839	19.65491	350.59197	5.73479	0.1132086	0.24159754	2.5531385	17	2 26.0	16.9
2757 Crisser	11.8	X	15.27613	50.45525	10.12776	0.67987	0.1993836	0.17479181	3.1680254	17	—	—
2758 Cordelia	13.9	X	174.77232	66.81178	335.39225	2.78982	0.2727974	0.24163158	2.5528987	17	4 6.1	18.4
2759 Idomeneus	10.0	X	100.66115	9.02528	171.22030	21.95147	0.0662920	0.08349902	5.1842006	17	7 4.8	17.2
2760 Kacha	10.04	X	108.00431	151.29535	352.51323	13.48635	0.1192034	0.12377169	3.9876941	17	6 1.8	16.0
2761 Eddington	12.1	X	284.44484	99.67390	31.29518	3.17139	0.1808473	0.18207543	3.0829642	17	11 9.5	16.2
2762 Fowler	12.8	X	93.66592	186.42834	304.08081	4.70524	0.1526130	0.27699156	2.3307285	17	4 5.5	15.3
2763 Jeans	12.3	X	134.80131	33.83195	308.78408	3.54151	0.2189465	0.26466101	2.4025701	17	—	—
2764 Moeller	13.2	X	272.21140	252.62484	283.79772	1.99028	0.0833633	0.29268891	2.2466317	17	—	—
2765 Dinant	12.1	X	232.79051	129.76726	348.07877	14.04686	0.0556278	0.17653798	3.1471005	17	9 9.6	16.7
2766 Leeuwenhoek	12.7	X	304.05643	146.69252	330.37022	6.54041	0.1820167	0.24250579	2.5467597	17	11 28.5	15.4
2767 Takenouchi	11.7	X	285.28694	252.42067	65.85817	10.88574	0.0808887	0.18743817	3.0238763	17	4 22.5	16.1
2768 Gorky	12.2	X	146.43881	334.80071	53.28851	6.27731	0.1709818	0.29505289	2.2346155	17	2 1.4	14.9
2769 Mendeleev	12.1	X	204.47570	47.07294	102.35974	2.52179	0.1280193	0.17709781	3.1404647	17	9 13.8	17.1
2770 Tsvet	12.8	X	25.04087	135.57363	38.75254	2.85983	0.0637805	0.30822394	2.1704934	17	1 27.1	14.9
2771 Polzunov	12.4	X	350.00528	116.62337	207.38860	13.95805	0.2267523	0.22493779	2.6776949	17	7 7.5	15.2
2772 Dugan	13.9	X	274.08625	311.19536	130.59402	9.78899	0.2047413	0.27993921	2.3143386	17	8 24.0	17.0
2773 Brooks	13.1	X	270.50067	296.93448	101.18627	3.67018	0.1430068	0.27758159	2.3274245	17	6 26.5	16.0
2774 Tenojoki	11.3	X	40.74380	108.40010	290.93925	8.52660	0.1412622	0.17346516	3.1841574	17	—	—
2775 Odishaw	13.4	X	321.75227	306.29295	102.17009	3.73222	0.1871042	0.26159232	2.4213230	17	9 26.8	15.5
2776 Baikal	12.7	X	311.85456	321.02276	187.53538	4.78817	0.1744638	0.27056832	2.3674714	17	—	—
2777 Shukshin	12.9	X	44.28138	95.63586	36.85785	4.90955	0.0906724	0.27002371	2.3706537	17	1 9.7	15.3
2778 Tangshan	13.1	X	33.30704	286.39211	91.93133	4.61431	0.1220744	0.28604351	2.2812943	17	12 30.6	15.6
2779 Mary	13.2	X	351.57529	123.06991	80.27960	3.89116	0.0627827	0.29952005	2.2123412	17	1 20.6	15.6
2780 Monnig	13.6	X	44.02759	312.23756	274.94961	5.46766	0.1158527	0.30332153	2.1938178	17	5 24.3	15.4
2781 Kleczek	11.9	X	55.49446	256.59314	146.81634	2.31085	0.1842004	0.17638870	3.1488759	17	—	—
2782 Leonidas	13.6	X	17.12669	312.21284	10.36690	3.78089	0.2212029	0.22450852	2.6811071	17	9 18.0	15.8
2783 Chernyshevskij	13.3	X	164.44520	170.41166	198.27831	0.78139	0.1646929	0.24050286	2.5608799	17	2 7.2	16.9
2784 Domeyko	12.8	X	150.13976	180.91251	108.09900	6.69368	0.1735946	0.29366728	2.2416390	17	—	—
2785 Sedov	12.3	X	285.53198	95.45604	334.43598	1.43808	0.0444168	0.20240011	2.8729554	17	9 15.5	16.0
2786 Grinevia	11.8	X	77.36382	20.05173	9.25627	13.23809	0.1759451	0.23435294	2.6054882	17	—	—
2787 Tovarishch	11.5	X	82.57750	63.55467	30.23848	10.32691	0.0558211	0.18762211	3.0218997	17	2 16.2	15.7
2788 Andenne	13.2	X	338.75185	132.26299	14.54388	2.61812	0.0984081	0.24053961	2.5606191	17	—	—
2789 Foshan	13.5	X	132.10398	140.86236	242.72261	3.81474	0.1640245	0.29646940	2.2274919	17	—	—
2790 Needham	12.5	X	355.37706	359.09608	50.79724	14.63898	0.1812522	0.22819140	2.6521813	17	12 4.3	15.0
2791 Paradise	12.2	X	331.57871	165.77157	336.09953	31.08469	0.1721437	0.26576911	2.3958873	17	—	—
2792 Ponomarev	13.1	X	2.88749	71.39319	16.71112	9.37195	0.1280503	0.28688571	2.2768274	17	—	—
2793 Valdaj	11.3	X	206.59621	187.21731	356.35884	22.09657	0.0303569	0.17480303	3.1678899	17	10 22.6	16.2
2794 Kulik	12.9	X	30.43200	75.96271	230.67496	7.49137	0.2169963	0.25782712	2.4448393	17	—	—
2795 Lepage	12.9	X	256.29687	285.12570	313.40408	6.04285	0.0283752	0.28330618	2.2959655	17	11 14.8	15.5
2796 Kron	12.0	X	217.54576	55.45278	158.43550	14.00020	0.1110696	0.22922989	2.6441650	17	12 17.9	16.1
2797 Teucer	8.8	X	156.70275	49.12882	69.93761	22.39278	0.0876993	0.08546483	5.1043969	17	6 24.2	16.0
2798 Vergilius	13.1	X	30.52015	173.97196	219.48885	5.32514	0.0589875	0.26214727	2.4179046	17	—	—
2799 Justus	14.2	X	204.65558	20.15652	283.09042	5.29934	0.1274698	0.26710381	2.3878992	17	—	—
2800 Ovidius	12.6	X	127.08024	181.39734	102.40922	3.08391	0.1509927	0.17668231	3.1453864	17	12 8.9	17.6

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2801 Huygens	11.8	X	192.47178	314.03268	34.15680	9.56741	0.1733253	0.21023291	2.8011450	17	2 19.8	16.5
2802 Weisell	10.9	X	54.30128	59.54781	129.35520	9.61400	0.1241239	0.17957411	3.1115270	17	5 15.8	14.9
2803 Vilho	11.9	X	254.79608	43.16230	20.81156	1.33038	0.1787585	0.17714469	3.1399107	17	7 15.8	16.9
2804 Yrjö	11.2	X	143.47704	174.24746	109.16419	11.22900	0.0769701	0.18836294	3.0139710	17	12 21.9	15.9
2805 Kalle	12.5	X	81.90523	310.27509	49.15784	6.88835	0.1462249	0.22302533	2.6929808	17	—	—
2806 Graz	13.2	X	326.83875	312.36347	116.05629	2.33927	0.0466925	0.26860804	2.3789759	17	11 16.7	15.8
2807 Karl Marx	12.7	X	13.09550	92.47516	28.44902	7.87852	0.1794272	0.21089157	2.7953095	17	—	—
2808 Belgrano	11.4	X	98.88418	113.24373	314.65769	8.94843	0.0789295	0.18887131	3.0085603	17	2 3.7	15.4
2809 Vernadskij	13.60	X	110.25639	348.55395	357.23837	2.47552	0.1808898	0.26058036	2.4275877	17	—	—
2810 Lev Tolstoj	12.4	X	30.77646	258.81636	193.33897	12.71783	0.1521575	0.23420294	2.6066006	17	—	—
2811 Střemchovi	11.8	X	17.38076	107.64844	331.89051	1.02945	0.0349688	0.20324600	2.8649786	17	—	—
2812 Scaltriti	13.1	X	18.03128	100.92710	68.18691	6.81402	0.0917030	0.29703285	2.2246741	17	1 7.8	15.4
2813 Zappalà	10.9	X	100.48702	247.98528	231.77510	14.76119	0.1522683	0.17734486	3.1375475	17	4 23.1	15.3
2814 Vieira	12.2	X	333.69527	178.90081	154.03733	2.46152	0.0702819	0.20290234	2.8682127	17	7 12.8	15.9
2815 Soma	12.6	X	168.50098	237.52602	119.87390	5.70424	0.1691656	0.29538479	2.2329413	17	1 15.8	15.5
2816 Pien	11.9	X	273.62102	264.77593	93.66722	7.71208	0.1877784	0.21882171	2.7273598	17	5 11.1	16.1
2817 Perec	13.8	X	249.49642	97.26324	254.72465	2.27209	0.1782648	0.27209313	2.3586183	17	3 31.0	17.5
2818 Juvenalis	14.1	X	52.79081	100.79495	60.92864	2.95726	0.1509120	0.26903158	2.3764784	17	3 10.5	16.0
2819 Ensor	11.9	X	123.74945	344.19711	18.39271	2.43634	0.2043498	0.21532318	2.7568229	17	—	—
2820 Iisalmi	12.9	X	168.85405	159.86348	216.75531	2.94524	0.1616845	0.29599272	2.2298827	17	2 8.4	15.8
2821 Slávka	13.3	X	47.95504	349.03167	58.68083	6.74108	0.1965002	0.25878692	2.4387906	17	—	—
2822 Sacajawea	12.6	X	87.92319	21.33167	93.21634	14.72076	0.1233736	0.23734972	2.5835105	17	3 21.5	16.0
2823 van der Laan	13.2	X	71.50668	127.39854	248.48578	3.82098	0.0916878	0.26336883	2.4104223	17	—	—
2824 Franke	13.1	X	282.80044	72.27969	312.58356	3.36578	0.2071111	0.27796522	2.3252826	17	6 14.1	16.4
2825 Crosby	13.2	X	127.60704	81.59418	329.50048	3.51972	0.1733904	0.29270365	2.2465562	17	2 5.8	15.6
2826 Ahti	11.1	X	2.30465	150.83074	33.67052	15.46583	0.0477732	0.17019241	3.2248481	17	2 26.9	15.7
2827 Vellamo	12.0	X	143.30958	205.14952	345.51624	8.62253	0.0306458	0.28090199	2.3090474	17	8 28.4	14.8
2828 Iku-Turso	13.0	X	236.08935	23.69317	74.41527	3.30623	0.0904361	0.29365445	2.2417043	17	8 14.7	16.0
2829 Bobhope	10.7	X	272.56281	339.20580	324.05632	14.30054	0.1887614	0.18138204	3.0908163	17	3 3.9	15.7
2830 Greenwich	12.64	X	81.92768	141.10124	49.01476	25.35494	0.2053013	0.26875558	2.3781052	17	6 25.4	15.7
2831 Stevin	12.6	X	69.63121	273.07557	81.93079	4.21903	0.1983219	0.29692235	2.2252260	17	—	—
2832 Lada	12.3	X	338.99698	346.87590	162.71174	4.17038	0.0862491	0.25310068	2.4751822	17	—	—
2833 Radishchev	11.8	X	4.89945	349.57501	336.79275	1.33325	0.0672554	0.20207703	2.8760168	17	8 22.2	15.4
2834 Christy Carol	11.8	X	298.58978	279.05830	208.55858	6.43547	0.1585673	0.24324735	2.5415811	17	12 8.8	14.5
2835 Ryoma	12.0	X	286.83035	349.98847	5.29846	1.33250	0.0796085	0.21667844	2.7453154	17	6 3.5	15.8
2836 Sobolev	11.4	X	279.91969	319.18728	348.14522	9.66283	0.0925750	0.18929320	3.0040884	17	3 26.3	15.9
2837 Griboedov	11.9	X	56.64194	356.92773	61.91923	2.88687	0.0592110	0.19928878	2.9027802	17	—	—
2838 Takase	14.2	X	277.20813	333.45538	80.34846	2.13066	0.1902368	0.27525435	2.3405248	17	7 20.8	17.2
2839 Annette	12.9	X	200.55227	6.82660	44.56899	4.80852	0.1501313	0.29866456	2.2165639	17	4 28.6	16.0
2840 Kallavesi	12.5	X	214.95304	263.31022	59.06596	8.50840	0.0938434	0.26534137	2.3984614	17	1 23.7	16.1
2841 Puijo	13.0	X	352.57337	89.37614	91.59346	4.91406	0.0845093	0.29154621	2.2524982	17	—	—
2842 Unsöld	11.4	X	108.98809	203.28142	310.05570	11.70101	0.1014903	0.23288747	2.6164070	17	6 1.7	15.1
2843 Yeti	13.0	X	295.75192	255.70806	256.05806	5.46138	0.1290602	0.28283952	2.2984902	17	—	—
2844 Hess	13.3	X	311.80311	151.13362	127.73271	2.95489	0.1710944	0.29768768	2.2214104	17	2 25.5	16.3
2845 Franklinken	13.2	X	240.20557	135.31617	144.37284	6.01712	0.1626931	0.28996264	2.2606917	17	—	—
2846 Ylppö	11.4	X	310.17994	74.48359	144.66251	11.42582	0.0721162	0.17038361	3.2224351	17	1 22.3	16.0
2847 Parvati	12.6	X	10.92168	12.18785	246.94401	2.45352	0.1158241	0.30856289	2.1689036	17	5 6.5	14.5
2848 ASP	11.7	X	75.62393	51.78691	338.82127	0.91412	0.1954697	0.17219802	3.1997591	17	—	—
2849 Shklovskij	12.9	X	252.43421	295.04629	44.05241	6.81119	0.0091093	0.23968004	2.5667376	17	4 6.2	16.4
2850 Mozhaikij	12.6	X	357.04692	344.01150	106.15012	7.84873	0.0496232	0.25713170	2.4492454	17	—	—
2851 Harbin	12.2	X	326.54558	15.81784	50.41195	8.54703	0.1235223	0.25243947	2.4795025	17	11 6.8	14.6
2852 Declercq	12.7	X	247.71156	256.89789	110.10606	1.70137	0.0842269	0.21197195	2.7858033	17	5 3.6	16.8
2853 Harvill	12.9	X	326.64380	201.95375	204.39486	4.15884	0.1454626	0.27452486	2.3446693	17	10 6.8	14.8
2854 Rawson	12.7	X	106.21208	280.43664	292.33895	5.76466	0.1218120	0.30099593	2.2051034	17	8 19.1	15.4
2855 Bastian	13.1	X	73.13426	99.99244	339.20127	8.14758	0.1675084	0.25637893	2.4540373	17	—	—
2856 Röser	11.1	X	317.48702	216.96140	16.88561	9.90919	0.0099785	0.18694145	3.0292305	17	2 26.6	15.4
2857 NOT	12.5	X	130.26998	331.54963	149.83999	5.73260	0.0957112	0.26508257	2.4000222	17	5 14.7	15.7
2858 Carlosporter	13.5	X	168.96355	182.03930	128.58088	6.69871	0.1948762	0.28888089	2.2663319	17	—	—
2859 Paganini	13.2	X	91.94382	341.03153	165.31673	3.55492	0.1184566	0.29427283	2.2385628	17	4 20.9	15.3
2860 Pasacennium	12.7	X	317.43264	70.76588	334.51261	22.68105	0.2162163	0.27672190	2.3322424	17	9 2.6	14.9
2861 Lambrecht	12.7	X	60.74833	224.87769	188.54096	4.04465	0.0726172	0.25369416	2.4713205	17	—	—
2862 Vavilov	12.7	X	194.09449	278.04146	225.82849	3.48491	0.1145356	0.30181638	2.2011054	17	8 24.6	15.9
2863 Ben Mayer	12.4	X	148.68502	220.36729	120.82773	1.96796	0.1943130	0.17522233	3.1628341	17	1 7.8	17.1
2864 Soderblom	12.9	X	196.63073	10.82987	135.18376	3.14244	0.1496617	0.21651183	2.7467236	17	8 31.9	17.3
2865 Laurel	11.3	X	71.33002	293.35198	321.78585	14.29395	0.0701624	0.24050262	2.5608816	17	8 23.4	14.6
2866 Hardy	11.7	X	102.86811	25.60132	317.03671	8.22277	0.2057275	0.19872101	2.9083067	17	—	—
2867 Steins	12.5	X	127.95248	251.10752	55.36548	9.93529	0.1457744	0.27122629	2.3636411	17	—	—
2868 Upupa	13.0	X	175.93461	261.99425	138.04880	7.53696	0.1740092	0.20821016	2.8192577	17	4 6.7	17.7
2869 Nepryadva	12.0	X	279.24258	297.11367	357.37159	12.88175	0.1732544	0.23014133	2.6371792	17	2 26.8	16.1
2870 Haupt	12.9	X	223.77894	279.84778	85.95905	4.15884	0.2097535	0.26616280	2.3935241	17	3 29.4	16.9
2871 Schober	12.7	X	201.92264	335.22088	28.35456	5.77200	0.1389087	0.29028602	2.2590125	17	3 1.3	16.0
2872 Gentelec	12.1	X	234.01499	238.82719	241.48332	2.87327	0.1213293	0.21728722	2.7401853	17	9 5.9	16.1
2873 Binzel	12.99	X	112.96630	168.33474	100.97247	5.90025	0.1581157	0.29176034	2.2513959	17	11 19.2	16.3
2874 Jim Young	12.8	X	118.67179	322.28326	79.19761	4.89114	0.1338099	0.29304304	2.2448213	17	1 1.1	14.8
2875 Lagerkvist	12.1	X	131.79762	170.36216	340.25519	9.04786	0.1043238	0.21097333	2.7945873	17	7 1.4	16.3
2876 Aeschylus	13.0	X	116.29867	97.24230	2.96340	14.87560	0.1166314	0.23463419	2.6034057	17	4 1.8	16.4
2877 Likhachev	12.2	X	319.29993	233.46204	80.64999	2.33517	0.1814856	0.17878982	3.1206198	17	5 14.5	16.3
2878 Panacea	11.8	X	345.82963	21.16466	318.13030	10.24799	0.0839619	0.18543713	3.0455910	17	8 9.7	15.5
2879 Shimizu	11.9	X	194.17595	25.06525	149.26101	10.71648	0.1418322	0.21381772	2.7697480	17	10 6.2	16.4
2880 Nihondaira	12.7	X	72.62170	246.97269	39.66625	5.73912	0.1676928	0.30131573	2.2035429	17	10 28.2	15.2

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2881 Meiden	13.1 ^m	X	84.57160	326.76231	173.01267	4.61625	0.1548656	0.29245827	2.2478127	17	4 2.8	14.9
2882 Tedesco	11.6	X	142.92908	7.02498	314.34574	0.28963	0.1932645	0.17602939	3.1531595	17	—	—
2883 Barabashov	13.2	X	25.63397	151.09626	48.50548	1.40742	0.0820241	0.29282319	2.2459448	17	3 9.5	15.2
2884 Reddish	12.0	X	335.56642	13.40940	41.29290	1.94545	0.1781269	0.17975440	3.1094461	17	10 26.6	15.2
2885 Palva	14.0	X	89.01677	44.04808	349.22247	2.87058	0.1946191	0.29453881	2.2372148	17	—	—
2886 Tinkaping	13.1	X	85.13932	332.61566	107.78400	1.30861	0.1542221	0.27070495	2.3666748	17	1 9.0	14.9
2887 Krinov	12.9	X	330.02204	149.09206	119.01527	4.37875	0.1501248	0.29024311	2.2592352	17	3 11.7	15.5
2888 Hodgson	12.7	X	71.10849	78.74637	351.43582	7.62868	0.1312182	0.29059125	2.2574304	17	—	—
2889 Brno	11.4	X	341.89870	124.49903	220.20269	9.49675	0.1162549	0.18760942	3.0220359	17	8 4.4	15.3
2890 Vilyujsk	13.1	X	140.09985	50.95753	356.79803	6.62295	0.1600591	0.28991911	2.2609181	17	2 19.2	15.7
2891 McGetchin	11.0	X	270.05208	251.00541	114.76831	9.29912	0.1370615	0.16054677	3.3527539	17	5 28.7	16.1
2892 Filipenko	10.3	X	97.25222	91.94525	326.53994	16.95552	0.2056385	0.17428194	3.1742012	17	2 12.5	14.4
2893 Peiroos	9.23	X	217.26024	171.60930	108.76732	14.66131	0.0762470	0.08430991	5.1509059	17	1 16.0	16.5
2894 Kakhovka	12.7	X	312.42123	32.24257	86.11389	2.58543	0.1356928	0.17889125	3.1194402	17	12 11.5	16.5
2895 Memnon	10.0	X	103.80639	277.23842	133.97682	27.20988	0.0496281	0.08216981	5.2399586	17	2 13.4	16.9
2896 Preiss	12.6	X	45.15857	121.18065	171.66907	5.99960	0.1868787	0.29790575	2.2203263	17	9 28.3	14.4
2897 Ole Römer	13.2	X	137.04083	100.94313	48.31579	5.83905	0.1003760	0.29259642	2.2471051	17	6 27.7	16.1
2898 Neuvo	11.8	X	351.40906	213.28149	116.73322	14.28290	0.0194583	0.24120232	2.5559267	17	8 7.6	15.0
2899 Runrun Shaw	13.4	X	237.07761	303.88554	19.72193	3.22309	0.1560416	0.28960891	2.2625322	17	2 11.9	16.8
2900 Luboš Perek	11.9	X	55.81953	290.96663	17.46065	10.15055	0.1016856	0.18730288	3.0253322	17	10 16.1	15.8
2901 Bagehot	12.1	X	281.23207	239.20042	69.06957	3.17220	0.0478926	0.20313397	2.8660318	17	4 4.4	16.2
2902 Westerlund	14.0	X	11.65500	158.96602	178.42637	4.37723	0.1984766	0.30137183	2.2032694	17	9 30.3	15.1
2903 Zhuhai	11.7	X	188.16555	244.05738	232.57132	14.34993	0.0591169	0.24044930	2.5612602	17	7 12.1	15.6
2904 Millman	11.7	X	190.39286	332.12539	79.50616	15.38964	0.1387256	0.23455775	2.6039713	17	5 1.9	16.0
2905 Plaskett	12.0	X	122.53916	220.04356	9.84627	8.90055	0.0946434	0.20980890	2.8049176	17	9 29.2	16.1
2906 Caltech	10.2	X	144.96632	295.36306	84.49260	30.64633	0.1074975	0.17490670	3.1666380	17	2 15.1	15.4
2907 Nekrasov	11.7	X	4.32489	199.92251	172.43980	10.21212	0.0960527	0.18818366	3.0158850	17	10 24.5	15.4
2908 Shimoyama	11.8	X	358.41214	154.28890	233.31337	13.36712	0.1548568	0.19186986	2.9771329	17	11 3.3	15.0
2909 Hoshi-no-ie	11.1	X	73.09519	285.06413	85.39209	11.45126	0.1191168	0.18797294	3.0181385	17	—	—
2910 Yoshkar-Ola	13.2	X	121.72960	326.20065	44.24988	2.94194	0.1564610	0.30162801	2.2020218	17	—	—
2911 Miahelena	11.7	X	346.93662	64.86939	149.28100	9.61792	0.0984964	0.21107561	2.7936844	17	2 18.2	15.1
2912 Lapalma	12.5	X	257.89384	76.16723	108.15378	7.27581	0.0708479	0.28455246	2.2892566	17	—	—
2913 Horta	12.2	X	90.09153	21.52827	30.37880	16.08759	0.1988690	0.22158542	2.7046346	17	1 7.6	15.4
2914 Glärnisch	13.4	X	71.52049	222.51446	166.78838	2.95959	0.1297891	0.28986924	2.2611773	17	—	—
2915 Moskva	13.1	X	271.63934	357.72828	352.81877	13.20290	0.1845987	0.24013194	2.5635164	17	4 19.3	17.2
2916 Voroneliya	13.6	X	18.69464	244.74857	311.01565	3.59567	0.0984387	0.29491933	2.2352901	17	2 15.7	15.9
2917 Sawyer Hogg	11.8	X	286.29332	39.75058	348.68561	12.82064	0.1123444	0.21099785	2.7943708	17	7 16.6	15.8
2918 Salazar	12.0	X	253.18684	165.82588	135.70201	2.09333	0.1538634	0.17436541	3.1731881	17	2 19.8	17.0
2919 Dali	12.0	X	105.30779	123.71503	161.27223	1.42980	0.1498228	0.17745172	3.1362878	17	11 20.4	16.9
2920 Automedon	8.8	X	203.63860	197.99382	230.94857	21.12199	0.0260508	0.08537173	5.1081072	17	6 14.7	15.9
2921 Sophocles	13.4	X	277.30663	197.57020	149.79150	1.48583	0.1544072	0.16831920	3.2487300	17	5 9.6	18.1
2922 Dikan'ka	13.7	X	140.06776	344.83499	188.01610	2.98307	0.1436010	0.26981400	2.3718819	17	8 8.3	17.1
2923 Schuyler	13.6	X	183.77778	172.37887	350.72324	2.87193	0.1320072	0.25634933	2.4542262	17	9 10.1	17.3
2924 Mitake-mura	12.0	X	301.08457	193.70759	110.69349	3.13848	0.0469531	0.20078427	2.8883485	17	4 24.9	16.0
2925 Beatty	13.7	X	138.69778	277.72458	217.29291	2.22304	0.1908061	0.26741696	2.3860347	17	6 22.4	17.2
2926 Caldeira	13.2	X	296.36073	35.41755	220.97815	3.48094	0.1188540	0.28727447	2.2747728	17	1 16.6	16.5
2927 Alamosa	12.0	X	15.69331	189.63031	150.48439	17.01964	0.1692781	0.24465147	2.5318472	17	10 12.3	14.7
2928 Epstein	11.6	X	61.89409	155.38802	310.59019	9.52564	0.0613670	0.18886431	3.0086346	17	1 29.5	15.4
2929 Harris	11.7	X	147.07836	23.16832	142.73395	14.89157	0.0683434	0.17879381	3.1205734	17	8 3.9	16.4
2930 Euripides	13.0	X	8.63447	95.62505	359.35095	4.06068	0.0221766	0.21265239	2.7798576	17	—	—
2931 Mayakovsky	11.8	X	14.01727	290.01404	25.21107	2.21711	0.0565113	0.20215129	2.8753124	17	8 21.8	15.4
2932 Kempchinsky	11.6	X	126.71874	198.42675	169.46031	2.28011	0.1110068	0.14310696	3.6198915	17	1 13.6	16.9
2933 Amber	11.8	X	287.82858	222.30042	121.42565	7.21356	0.0467794	0.23391810	2.6087161	17	5 25.1	15.4
2934 Aristophanes	11.6	X	99.36100	89.86976	202.23310	8.79645	0.0511053	0.17458373	3.1705422	17	11 12.1	16.2
2935 Naerum	13.1	X	110.62189	137.76050	135.68504	13.05665	0.1250299	0.23513563	2.5997031	17	11 17.7	17.2
2936 Nechvíle	12.2	X	292.36824	320.76519	333.83869	8.45940	0.0740329	0.22464256	2.6800405	17	3 19.9	15.9
2937 Gibbs	13.1	X	161.69566	71.84907	265.71845	21.75808	0.3033273	0.27898495	2.3196130	17	1 1.8	16.5
2938 Hopi	11.6	X	198.44210	263.34160	108.97454	41.38114	0.3288789	0.17601907	3.1532827	17	4 15.2	18.1
2939 Coconino	12.5	X	47.53909	237.30522	349.96698	3.94889	0.1640555	0.25865353	2.4396289	17	6 15.1	14.8
2940 Bacon	14.2	X	77.05107	116.75128	273.76159	6.44168	0.2352125	0.21238096	2.7822255	17	—	—
2941 Alden	13.5	X	177.67818	65.10262	10.34167	3.23981	0.0898541	0.31232579	2.1514478	17	4 29.4	16.1
2942 Cordie	12.9	X	84.62086	154.85471	116.39085	6.81751	0.1535773	0.29423283	2.2387656	17	10 22.9	15.8
2943 Heinrich	12.6	X	313.79256	44.86562	313.89604	12.91510	0.1537966	0.25730365	2.4481541	17	7 2.5	15.6
2944 Peyo	12.8	X	3.86247	153.97003	194.68124	10.66882	0.1661948	0.22858069	2.6491692	17	9 22.1	15.4
2945 Zaanstra	12.6	X	309.79626	244.04373	95.77894	2.62463	0.1380143	0.22601998	2.6691409	17	6 3.9	16.1
2946 Muchachos	13.3	X	242.08520	103.22165	321.57188	0.57912	0.1758975	0.25646860	2.4534653	17	6 29.4	17.0
2947 Kippenhahn	12.8	X	157.40765	166.63101	283.96939	3.13589	0.1249810	0.28115460	2.3076641	17	5 4.2	16.0
2948 Amosov	12.7	X	262.04572	245.78595	208.83942	12.33029	0.1083638	0.20352024	2.8624043	17	9 4.5	16.9
2949 Kaverznev	13.2	X	198.29058	130.85502	163.15070	4.86665	0.1402018	0.30320993	2.1943561	17	—	—
2950 Rousseau	11.8	X	124.00458	294.48817	112.03239	9.59641	0.2599439	0.21500616	2.7595321	17	3 3.3	15.8
2951 Perepadin	10.2	X	320.62536	119.28513	24.86927	14.76504	0.1139575	0.17772717	3.1330464	17	—	—
2952 Lilliputia	14.2	X	254.71307	78.99740	323.21953	3.31838	0.1713412	0.28020241	2.3128891	17	6 10.4	17.6
2953 Vysheslavia	11.7	X	111.62923	12.60501	250.92779	1.07217	0.0209551	0.20706916	2.8296047	17	10 19.8	15.6
2954 Delsemme	13.5	X	47.48828	50.94178	164.38196	3.93360	0.1945224	0.28494281	2.2871654	17	5 24.6	15.0
2955 Newburn	13.3	X	266.02662	234.67228	32.42629	3.59370	0.1158779	0.30617919	2.1801461	17	—	—
2956 Yeomans	12.2	X	229.97819	124.34194	112.21082	2.86874	0.0906509	0.21438739	2.7648393	17	—	—
2957 Tatsuo	10.8	X	133.18845	62.29981	249.41692	8.71415	0.0926373	0.18780883	3.0198964	17	—	—
2958 Arpetito	12.4	X	86.97083	311.78702	297.50963	1.02138	0.0127717	0.20234101	2.8735148	17	8 29.8	16.3
2959 Scholl	11.1	X	79.80897	285.07679	121.23632	5.23303	0.2748502	0.12585104	3.9436482	17		

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
2961 Katsurahama	13.0 ^m	X	66.19687	195.98400	221.07454	4.54824	0.1374409	0.28858377	2.2678872	17	—	—
2962 Otto	11.1	X	165.00350	117.20914	54.21549	15.64332	0.0393562	0.23949463	2.5680621	17	9 8.2	15.0
2963 Chen Jiageng	12.2	X	327.60806	351.76380	47.57275	2.70143	0.0759892	0.20268282	2.8702833	17	10 2.5	15.8
2964 Jaschek	12.6	X	40.39431	59.59632	330.60955	13.57008	0.1995579	0.23606352	2.5928863	17	—	—
2965 Surikov	12.5	X	143.31030	72.58350	126.89064	24.21081	0.2203796	0.26646884	2.3916912	17	9 28.7	16.9
2966 Korsunja	13.2	X	159.81615	197.28196	46.42496	2.54486	0.1385525	0.25722617	2.4486457	17	11 26.9	16.9
2967 Vladisvyat	11.0	X	342.69013	0.02330	32.43251	17.99646	0.1348282	0.17222314	3.1994479	17	10 14.6	14.7
2968 Iliya	14.8	X	267.28859	34.25280	274.33692	9.15280	0.3114664	0.27072979	2.3665300	17	2 12.5	19.2
2969 Mikula	12.6	X	113.61160	105.92668	181.32059	1.87969	0.0284728	0.20527173	2.8460987	17	11 22.3	16.7
2970 Pestalozzi	12.5	X	356.64721	76.84336	342.59343	12.08391	0.1538900	0.23001546	2.6381412	17	12 20.9	15.5
2971 Mohr	13.2	X	337.74624	352.56707	76.12376	6.99553	0.1173505	0.29272015	2.2464718	17	12 7.9	15.0
2972 Niilo	13.5	X	273.44799	139.38964	204.30919	1.09664	0.1691664	0.31235029	2.1513353	17	4 8.2	16.3
2973 Paola	13.0	X	94.83190	90.49730	336.50594	1.55717	0.1520025	0.25405089	2.4690065	17	1 15.4	15.5
2974 Holden	13.3	X	217.41923	130.38649	214.94334	6.42354	0.1404796	0.28019056	2.3129543	17	2 18.3	16.9
2975 Spahr	13.0	X	346.25706	317.15181	236.58228	6.89666	0.0947979	0.29234381	2.2483993	17	—	—
2976 Lautaro	10.8	X	179.03841	185.62233	206.83333	9.84730	0.1427814	0.16054634	3.3527598	17	4 1.7	16.2
2977 Chivilikhin	12.6	X	87.76757	185.16653	170.50736	9.58996	0.1713856	0.21225118	2.7833595	17	—	—
2978 Roudebush	12.1	X	49.81710	5.18332	348.35081	1.23356	0.1885904	0.18105756	3.0945079	17	12 15.3	16.1
2979 Murmansk	12.5	X	39.04407	196.85529	148.51235	11.41831	0.1577597	0.17864286	3.1223310	17	11 19.2	16.7
2980 Cameron	13.4	X	36.21305	254.25254	172.24323	7.27722	0.1811266	0.23959563	2.5673404	17	—	—
2981 Chagall	12.5	X	92.24751	99.02839	185.86670	0.86569	0.1712661	0.17612632	3.1520025	17	11 9.3	17.2
2982 Muriel	11.7	X	134.80486	40.84839	42.82456	10.23653	0.0620422	0.18946490	3.0022731	17	4 9.2	16.0
2983 Politava	11.4	X	179.11544	86.38336	247.78388	4.26808	0.0604787	0.20528907	2.8459384	17	1 9.4	15.5
2984 Chaucer	13.1	X	37.75744	46.55064	81.81502	3.05335	0.1344977	0.25386424	2.4702165	17	—	—
2985 Shakespeare	12.1	X	87.54894	277.66065	34.22775	2.64959	0.0456323	0.20502866	2.8483477	17	11 22.9	16.2
2986 Mrinalini	12.1	X	15.52017	303.31325	51.26893	2.53676	0.1614727	0.17460889	3.1702376	17	10 21.3	15.8
2987 Sarabhai	12.3	X	83.86607	336.84190	167.39729	1.02062	0.0672186	0.20092878	2.8869634	17	4 16.9	16.2
2988 Korhonen	11.7	X	181.77986	133.75134	100.89703	14.73055	0.1235360	0.23392294	2.6086802	17	12 7.2	15.8
2989 Imago	13.0	X	117.24324	247.56475	75.75606	3.62740	0.1740363	0.29435574	2.2381424	17	—	—
2990 Trimberger	13.7	X	243.82086	319.16675	171.81780	2.80057	0.1215312	0.25863979	2.4397153	17	10 3.6	17.1
2991 Bilbo	13.6	X	265.35651	198.04424	96.63013	5.15093	0.2210955	0.27578103	2.3375440	17	2 1.7	17.5
2992 Vondel	13.5	X	120.95949	267.94126	184.97063	7.04849	0.1877046	0.21629591	2.7485513	17	4 14.9	17.4
2993 Wendy	12.0	X	62.21033	74.60826	313.37363	12.29362	0.1956619	0.23705021	2.5856862	17	—	—
2994 Flynn	13.9	X	66.42541	321.94445	358.35214	2.48529	0.2274715	0.26195986	2.4190576	17	12 8.7	17.2
2995 Taratuta	12.1	X	309.94344	329.51335	169.77352	14.83587	0.1352581	0.23290369	2.6162855	17	—	—
2996 Bowman	12.1	X	285.40378	300.71373	334.41824	3.66356	0.0329921	0.21224420	2.7834206	17	2 25.3	16.1
2997 Cabrera	12.7	X	162.31334	349.90095	355.11541	7.19018	0.1980490	0.24135071	2.5548790	17	1 12.2	16.5
2998 Berendeya	13.9	X	52.92309	204.66025	157.46523	3.07833	0.1972475	0.26143338	2.4223042	17	—	—
2999 Dante	13.6	X	273.64896	38.90941	74.94188	6.76781	0.1051156	0.28797165	2.2710998	17	10 26.1	16.1
3000 Leonardo	13.8	X	194.75121	173.37261	200.98402	2.75094	0.1804375	0.27314836	2.3525399	17	3 10.3	17.4
3001 Michelangelo	12.0	X	358.89677	136.13999	297.73673	18.34989	0.0694883	0.27241607	2.3567539	17	—	—
3002 Delasalle	12.6	X	128.68618	132.83034	115.39322	6.14323	0.1309226	0.29400826	2.2399055	17	11 7.2	15.8
3003 Konček	11.2	X	205.14565	285.06714	103.69976	11.59232	0.1148310	0.18708639	3.0276657	17	4 23.5	16.1
3004 Knud	15.1	X	345.07147	213.00661	322.43618	30.10800	0.2646373	0.23615175	2.5922404	17	—	—
3005 Pervictoralex	13.7	X	211.33986	77.62934	177.48534	2.36204	0.1843740	0.27038494	2.3685418	17	—	—
3006 Livadia	14.1	X	1.01651	6.39471	8.58747	3.04696	0.1893770	0.25974152	2.4328115	17	10 31.6	16.0
3007 Reaves	12.6	X	204.09660	252.64374	68.80915	8.33145	0.1337342	0.27047222	2.3680322	17	1 11.3	16.1
3008 Nojiri	12.3	X	323.68359	300.33496	168.81148	0.80937	0.1286309	0.17395538	3.1781726	17	12 17.7	16.1
3009 Coventry	13.7	X	196.98802	316.48747	8.48524	4.55894	0.2054829	0.30282618	2.1962095	17	1 6.9	17.0
3010 Ushakov	12.7	X	331.25468	172.87330	127.03799	2.03559	0.1654342	0.17004787	3.2266752	17	5 18.1	16.6
3011 Chongqing	12.4	X	271.08533	209.26419	207.07442	6.22306	0.2045585	0.17248284	3.1962356	17	7 18.8	17.3
3012 Minsk	11.0	X	118.73581	91.35421	355.03160	18.20614	0.0676170	0.16981019	3.2296854	17	3 23.8	15.6
3013 Dobrovoleva	13.9	X	93.86034	94.89963	7.09854	3.66109	0.1408728	0.27198615	2.3592367	17	2 26.0	16.1
3014 Huangsushu	13.0	X	186.31957	180.50751	140.76270	0.98912	0.2288047	0.27130459	2.3631863	17	—	—
3015 Candy	11.1	X	0.74506	300.96078	38.16193	17.40247	0.1736781	0.15815219	3.3865117	17	9 12.5	15.2
3016 Meuse	12.3	X	300.91471	318.43036	128.90827	2.89513	0.0443610	0.20654006	2.8344351	17	10 30.5	16.0
3017 Petrović	11.7	X	121.33526	217.01511	257.54068	11.83338	0.1285020	0.23404061	2.6078057	17	4 28.9	15.3
3018 Godiva	12.6	X	203.20627	72.76853	228.29002	4.72816	0.1869692	0.27050157	2.3678609	17	—	—
3019 Kulín	11.9	X	61.27246	317.10802	104.16864	3.21976	0.0517465	0.20345640	2.8630031	17	—	—
3020 Naudts	12.3	X	289.99473	195.93250	141.85197	6.27184	0.0588335	0.21478267	2.7614460	17	5 20.8	16.1
3021 Lucubratió	11.9	X	11.98049	96.58041	352.93067	16.53536	0.2456507	0.17262846	3.1944379	17	—	—
3022 Dobermann	14.0	X	227.06404	247.32860	180.86770	23.52146	0.1040103	0.36733660	1.9309006	17	6 13.6	17.1
3023 Heard	13.5	X	17.80756	344.55668	230.65418	3.99422	0.0849548	0.29874153	2.2161831	17	3 14.5	15.7
3024 Hainan	10.7	X	262.84671	341.26988	27.41480	14.84656	0.1297495	0.15635024	3.4124819	17	5 20.5	16.0
3025 Higson	10.2	X	354.82560	114.56823	293.41256	21.01651	0.0863196	0.17221150	3.1995922	17	11 16.6	14.7
3026 Sarastro	11.6	X	261.96774	106.65939	215.81495	9.65292	0.0219421	0.18659980	3.0329268	17	4 2.1	16.0
3027 Shavarsh	13.2	X	325.11160	155.03107	194.40726	1.97553	0.2198468	0.22560716	2.6723959	17	6 28.0	16.0
3028 Zhangguoxi	10.7	X	350.47447	9.68094	189.53311	9.52098	0.0311428	0.18779414	3.0200539	17	2 16.4	14.9
3029 Sanders	12.8	X	277.89823	269.31933	313.66816	3.42330	0.1115901	0.29409203	2.2394801	17	—	—
3030 Vehrenberg	13.8	X	358.97329	109.92614	292.79630	3.48817	0.2457907	0.28827575	2.2695024	17	12 25.4	15.0
3031 Houston	12.8	X	330.83690	249.39918	317.78329	4.34078	0.0980338	0.29476399	2.2360753	17	—	—
3032 Evans	11.5	X	85.61791	275.28643	88.39836	3.22546	0.0845330	0.20038000	2.8922320	17	—	—
3033 Holbaek	12.7	X	307.91442	67.47974	166.86237	4.74020	0.0951767	0.29483905	2.2356958	17	1 1.7	15.7
3034 Climenhaga	12.6	X	96.75632	314.01443	10.60272	4.92639	0.2105019	0.27816902	2.3241467	17	—	—
3035 Chambers	12.9	X	280.01090	31.53164	180.10632	2.59071	0.1312200	0.23056192	2.6339710	17	—	—
3036 Krat	10.4	X	342.69968	319.77285	23.70878	22.88677	0.0993970	0.17139120	3.2097930	17	8 22.9	14.9
3037 Alku	11.8	X	329.14449	330.32032	107.79903	19.02231	0.1894322	0.22547883	2.6734098	17	11 26.9	14.7
3038 Bernes	13.4	X	76.36303	11.05518	351.64184	4.71319	0.2061542	0.25890110	2.4380734	17	—	—
3039 Yangel	12.5	X	262.65634	72.22602	190.60297	15.25100	0.1476079	0.24113375	2.5564112	17	—	—
3040 Kozai	13.8	X	213.40985	290.18706	143.50944	46.63983	0.2004366	0.39468936	1.8406269	17	6 16.5	17.7

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3041 Webb	12.5	X	119.63041	351.29693	82.39674	14.62966	0.1458948	0.23672885	2.5880258	17	3 16.5	16.2
3042 Zelinsky	13.9	X	123.55041	70.61750	226.19684	4.99521	0.2097266	0.28672545	2.2776757	17	—	—
3043 San Diego	13.6	X	7.51136	31.74737	351.10545	21.78767	0.1067335	0.36856182	1.9266189	17	11 27.2	15.8
3044 Saltykov	11.8	X	46.31980	71.30784	242.30797	13.49696	0.1596489	0.20457785	2.8525306	17	10 16.2	15.5
3045 Alois	11.6	X	120.76530	330.87494	36.20619	3.34343	0.1124480	0.17796752	3.1302249	17	—	—
3046 Molière	12.4	X	28.60586	264.75093	188.45610	18.38695	0.1439932	0.17720088	3.1392468	17	—	—
3047 Goethe	12.8	X	56.87710	78.52183	317.25881	1.61035	0.0274437	0.22945185	2.6424595	17	—	—
3048 Guangzhou	13.1	X	0.78586	266.96781	214.21526	1.93872	0.1461698	0.26540744	2.3980634	17	—	—
3049 Kuzbass	12.0	X	296.11549	167.81920	95.03406	2.49800	0.1393336	0.17900948	3.1180665	17	2 17.8	16.5
3050 Carrera	14.0	X	211.87757	85.10857	239.99427	1.30622	0.1894725	0.29703109	2.2246828	17	1 19.9	17.3
3051 Nantong	12.3	X	141.02295	93.45385	280.16475	13.35526	0.2575794	0.23599755	2.5933694	17	1 28.9	16.1
3052 Herzen	13.7	X	354.50683	279.32020	238.52118	3.89939	0.1831693	0.26948968	2.3737845	17	—	—
3053 Dresden	13.2	X	332.18142	316.39867	6.83397	4.60822	0.2050885	0.26854051	2.3793747	17	5 27.3	15.6
3054 Strugatskia	11.8	X	139.72522	187.52580	146.26124	2.08012	0.2109139	0.18123206	3.0925213	17	—	—
3055 Annapavlova	12.6	X	132.94887	63.43951	3.43591	14.98896	0.1072598	0.24017891	2.5631821	17	3 12.4	16.0
3056 INAG	12.6	X	157.12698	346.21950	11.37627	5.63647	0.1166208	0.26194252	2.4191644	17	1 5.6	15.9
3057 Mälaren	13.4	X	229.38209	122.53680	75.32180	7.27764	0.0744308	0.28999855	2.2605051	17	12 22.5	16.3
3058 Delmary	13.9	X	38.21109	210.38430	207.85151	3.55135	0.1568898	0.29224235	2.2489197	17	—	—
3059 Pryor	13.3	X	341.19716	241.39102	181.46127	2.36319	0.1294714	0.28849094	2.2683737	17	12 5.7	15.0
3060 Delcano	13.2	X	66.39788	5.10750	362.71980	7.25771	0.1772782	0.28667150	2.2779614	17	12 20.3	16.3
3061 Cook	11.9	X	192.94794	243.69137	98.07083	3.25625	0.1930602	0.18136413	3.0910198	17	2 15.0	17.1
3062 Wren	10.8	X	268.85187	272.75647	110.20257	11.32054	0.1137201	0.18802116	3.0176225	17	6 16.8	15.2
3063 Makhaon	8.4	X	151.20752	205.73559	287.87636	12.16521	0.0589358	0.08291962	5.2083224	17	7 5.6	15.6
3064 Zimmer	13.5	X	248.07816	5.34475	157.18279	2.94578	0.1198109	0.25624759	2.4548758	17	11 19.8	16.8
3065 Sarahill	12.3	X	179.86568	209.72473	303.06609	4.30548	0.0656208	0.21996826	2.7178744	17	8 22.6	16.3
3066 McFadden	11.2	X	279.43973	188.29339	175.69323	15.57414	0.1337924	0.24556996	2.5255302	17	5 28.3	15.1
3067 Akhmatova	13.0	X	93.96415	95.57668	350.49505	4.52442	0.1374839	0.29281120	2.2460061	17	1 24.9	14.9
3068 Khantina	13.0	X	100.57584	133.02796	21.55340	6.44345	0.1023220	0.29606227	2.2295335	17	5 12.1	15.4
3069 Heyrovský	13.6	X	276.28146	123.88880	127.38669	1.68498	0.2408878	0.27310621	2.3527819	17	4 7.3	17.1
3070 Aitken	13.7	X	177.00866	52.60866	170.43765	2.34556	0.1975787	0.28145775	2.3060068	17	11 18.5	17.4
3071 Nestorov	12.1	X	261.36667	49.90582	134.09041	2.20501	0.0818415	0.17160690	3.2071028	17	12 27.4	16.6
3072 Vilnius	13.6	X	275.83917	139.91190	152.47520	5.64571	0.1801263	0.29420505	2.2389066	17	2 4.9	17.1
3073 Kursk	13.5	X	64.48394	232.21193	204.11450	5.03614	0.1359988	0.29349668	2.2425076	17	—	—
3074 Popov	13.7	X	173.32440	151.21005	348.70132	2.41604	0.1108749	0.27556265	2.3387788	17	7 30.2	17.0
3075 Bornmann	14.0	X	72.44907	10.87753	334.55572	9.97117	0.1315765	0.28750420	2.2735609	17	—	—
3076 Garber	13.4	X	154.93326	166.43662	195.53741	7.71469	0.1895331	0.29444456	2.2376923	17	1 7.3	16.2
3077 Henderson	12.7	X	99.25125	117.34676	297.46698	1.47332	0.0550816	0.29387425	2.2405864	17	—	—
3078 Horrocks	11.5	X	0.81997	141.97561	32.47546	7.09692	0.1024622	0.17639716	3.1487752	17	1 31.4	15.6
3079 Schiller	13.5	X	249.41076	300.56879	183.10195	3.92040	0.2189791	0.22412503	2.6841646	17	9 17.2	17.5
3080 Moisseiev	11.7	X	166.78241	307.33105	48.19427	13.89023	0.1945609	0.23378179	2.6097301	17	2 3.0	16.0
3081 Martinūboh	13.7	X	142.78878	279.74022	43.78133	5.28778	0.1835662	0.26342891	2.4100558	17	—	—
3082 Dzhalil	12.8	X	252.89402	231.77389	117.57384	10.32737	0.0751432	0.23810110	2.5780724	17	4 18.0	16.7
3083 OaFA	13.7	X	206.69604	263.90418	346.50932	6.48251	0.1517331	0.28545848	2.2844102	17	—	—
3084 Kondratyuk	13.6	X	197.67684	144.62127	185.84494	4.14348	0.2291474	0.25929269	2.4356181	17	1 23.2	17.7
3085 Donna	13.1	X	131.21739	160.02613	271.00463	3.82965	0.1004785	0.26693540	2.3889034	17	3 3.6	16.1
3086 Kalbaugh	13.3	X	115.58211	281.72634	300.77165	19.00276	0.0265277	0.36595072	1.9357725	17	8 24.4	15.6
3087 Beatrice Tinsley	12.9	X	150.25739	83.22145	338.43235	19.80322	0.1101090	0.18218291	3.0817516	17	3 26.9	17.8
3088 Jinxiuzhonghua	11.5	X	217.12201	315.16822	171.17055	10.25162	0.0537018	0.18796880	3.0181828	17	9 1.3	16.0
3089 Oujianquan	11.2	X	217.42496	184.48473	88.22579	16.69964	0.1866639	0.19667256	2.9284661	17	—	—
3090 Tjossem	12.9	X	220.84294	185.48227	170.49984	9.56810	0.0738337	0.17387133	3.1791966	17	3 29.1	17.6
3091 van den Heuvel	13.7	X	39.04416	9.81867	228.59047	2.01406	0.1664898	0.27371972	2.3492649	17	6 12.1	15.5
3092 Herodotus	11.3	X	185.92520	5.20273	8.56534	10.92048	0.1177214	0.14752785	3.5472085	17	3 20.4	16.8
3093 Bergholz	11.6	X	159.11808	61.06503	278.47363	12.75990	0.2063871	0.22520435	2.6755816	17	1 5.3	15.7
3094 Chukokkala	12.0	X	295.21700	51.63915	172.48148	14.56413	0.0737661	0.22880631	2.6474274	17	—	—
3095 Omarkhayyam	11.4	X	194.52551	115.98891	292.49972	2.96970	0.0773640	0.15086528	3.4946995	17	5 4.8	16.8
3096 Bezruč	12.7	X	100.49071	166.03577	168.55754	12.14897	0.1951255	0.22633701	2.6666478	17	—	—
3097 Tacitus	12.4	X	201.60595	87.86431	196.76850	7.46688	0.0905131	0.19673615	2.9278350	17	—	—
3098 van Sprang	14.8	X	141.26576	195.43934	117.82293	1.34667	0.2119237	0.28218145	2.3020623	17	—	—
3099 Hergenrother	11.4	X	309.41613	148.52158	31.09948	15.49607	0.1998863	0.20160161	2.8805365	17	—	—
3100 Zimmerman	13.5	X	24.48788	94.73673	27.07564	2.82078	0.0872048	0.29032643	2.2588029	17	—	—
3101 Goldberger	14.0	X	249.12438	208.94114	154.91650	28.55201	0.0462846	0.35406521	1.9788546	17	4 16.0	16.8
3102 Krok	16.2	X	149.37135	154.76696	172.08569	8.44409	0.4495454	0.31254855	2.1504254	17	—	—
3103 Eger	15.38	X	203.96357	254.05128	129.77528	20.92832	0.3542671	0.59229701	1.4042454	17	2 20.2	15.8
3104 Dürer	10.7	X	73.31708	242.33198	162.21683	24.16477	0.0887555	0.19321047	2.9633454	17	—	—
3105 Stumpff	12.9	X	110.26934	198.83302	140.49747	6.47834	0.1942436	0.28978645	2.2616080	17	—	—
3106 Morabito	11.5	X	257.03327	290.53681	121.39242	14.84989	0.2385028	0.17689866	3.1428213	17	6 27.6	16.6
3107 Weaver	13.4	X	328.21756	50.34323	271.54929	1.60125	0.2071963	0.30162275	2.2020473	17	5 12.6	15.6
3108 Lyubov	13.8	X	152.85717	226.45383	162.03700	3.28635	0.1676654	0.29603290	2.2296810	17	2 6.6	16.4
3109 Machin	12.0	X	6.95636	256.42723	22.77922	7.18356	0.0882292	0.25689720	2.4507357	17	6 12.2	14.7
3110 Wagman	12.7	X	35.85624	74.65546	347.69514	2.23858	0.1253277	0.24052715	2.5607075	17	—	—
3111 Misuzu	13.6	X	191.13746	291.80302	95.42985	2.01149	0.1605316	0.29704064	2.2246352	17	3 19.9	16.7
3112 Velimir	13.3	X	336.58110	246.19729	69.19224	3.95533	0.1962107	0.26877154	2.3780110	17	5 26.1	15.7
3113 Chizhevskij	13.2	X	89.02446	196.63866	185.79753	4.97150	0.0755609	0.26068850	2.4269163	17	—	—
3114 Ercilla	13.7	X	273.93485	108.31552	176.62543	2.23259	0.2001289	0.26193134	2.4192332	17	1 30.1	17.5
3115 Bailly	11.1	X	159.43330	172.19541	258.60732	10.17734	0.1418667	0.23773026	2.5807528	17	4 15.9	15.2
3116 Goodricke	12.5	X	274.59749	270.97470	80.32446	5.46888	0.1996840	0.29631377	2.2282718	17	4 21.6	15.8
3117 Niepce	12.4	X	264.88064	220.53417	93.29095	3.23907	0.0565442	0.20496477	2.8489396	17	3 21.9	16.4
3118 Claytonsmit	11.0	X	132.20913	258.41329	304.91461	13.26173	0.0579065	0.18630647	3.0361094	17	8 28.9	15.6
3119 Dobronravin	12.9	X	150.39282	329.46311	110.26626	4.75402	0.2021586	0.18398474	3.0615981	17	5 5.3	17.9
3120 Dangrania	11.7	X	65.26071	136.09405	220.51882	12.95746	0.1009143	0.18726369	3.0257543	17	12 25.3	16.1

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3121 Tamines	13.3 ^m	X	305.63205	88.12534	125.50938	6.36531	0.0855086	0.29644472	2.2276155	17	—	—
3122 Florence	14.1	X	351.43851	27.84691	336.09522	22.15080	0.4233003	0.41885479	1.7691326	17	8 24.1	11.9
3123 Dunham	13.54	X	112.34720	223.47003	123.11799	1.99594	0.1356140	0.25523388	2.4613715	17	—	—
3124 Kansas	13.46	X	11.88811	172.11768	160.88974	5.91679	0.0784832	0.21663325	2.7456972	17	9 12.1	16.8
3125 Hay	12.6	X	179.64389	356.62906	134.36657	12.77129	0.2026510	0.23520418	2.5991980	17	7 27.4	16.9
3126 Davydov	12.2	X	84.13652	160.94679	206.31217	9.71611	0.1083485	0.18939967	3.0029624	17	—	—
3127 Bagration	12.4	X	219.19064	29.94043	293.61083	4.82287	0.1995749	0.23536057	2.5980465	17	2 4.6	16.9
3128 Obruchev	12.1	X	273.10693	187.97257	102.42035	2.93687	0.1608386	0.17933974	3.1142372	17	2 24.6	17.0
3129 Bonestell	12.6	X	283.97564	84.30196	120.57883	6.92104	0.2144024	0.22231260	2.6987335	17	—	—
3130 Hillary	13.1	X	144.33096	244.25095	109.79631	4.21646	0.2007579	0.25474897	2.4644940	17	—	—
3131 Mason–Dixon	12.0	X	357.82442	149.32196	44.75420	2.40647	0.0435865	0.19704499	2.9247749	17	2 19.3	15.8
3132 Landgraf	11.7	X	297.47077	266.27496	112.99129	4.45668	0.1268237	0.17666628	3.1455767	17	7 16.2	15.7
3133 Sendai	12.8	X	44.61766	358.26318	37.15966	6.56660	0.1608312	0.30607367	2.1806472	17	—	—
3134 Kostinsky	10.5	X	47.34980	163.38292	256.97751	7.64163	0.2208195	0.12407623	3.9811664	17	—	—
3135 Lauer	13.7	X	345.93420	118.45058	304.92729	5.98046	0.1398044	0.26174343	2.4203910	17	12 10.6	16.0
3136 Anshan	12.0	X	80.93965	36.91336	80.81051	4.53753	0.1383411	0.17534204	3.1613944	17	3 27.1	16.1
3137 Horky	13.3	X	91.23502	135.25628	286.69866	2.47358	0.1892956	0.26485538	2.4013945	17	—	—
3138 Ciney	13.3	X	126.89659	319.92195	225.28764	4.61916	0.0742854	0.29686925	2.2254913	17	7 31.0	16.1
3139 Shantou	10.7	X	212.12149	109.31831	252.78616	20.54636	0.0212065	0.17235197	3.1978534	17	3 18.3	15.7
3140 Stellafane	10.9	X	314.09123	268.52436	101.53593	11.25871	0.1099754	0.18829098	3.0147389	17	7 30.7	14.8
3141 Buchar	10.8	X	338.57043	152.57845	321.12988	10.99558	0.0766803	0.15729378	3.3988214	17	—	—
3142 Kilopi	12.2	X	251.21330	188.05370	320.96345	14.19020	0.0883605	0.24146132	2.5540986	17	11 1.9	16.1
3143 Genecampbell	12.5	X	227.55904	328.46640	80.02173	3.09378	0.0836349	0.20533475	2.8455163	17	6 3.6	16.8
3144 Brosche	13.9	X	335.95565	95.96432	248.70249	5.51174	0.2092767	0.29696723	2.2250018	17	7 4.3	15.7
3145 Walter Adams	14.0	X	52.03898	42.26954	283.58616	5.02697	0.2358778	0.30358768	2.1925354	17	12 4.7	16.5
3146 Dato	13.5	X	320.72619	84.14469	183.30175	8.36616	0.2007177	0.25960305	2.4336765	17	2 23.0	16.9
3147 Samantha	13.7	X	203.89341	243.72752	215.64980	3.54579	0.1944560	0.23222695	2.6213659	17	7 8.4	18.0
3148 Grechko	12.3	X	316.28010	43.81025	0.85403	0.73334	0.1920901	0.18040123	3.1020090	17	9 6.1	15.8
3149 Okudzhava	13.8	X	188.31317	237.50633	188.29360	7.12903	0.1575109	0.29250721	2.2475619	17	5 7.8	17.1
3150 Tosa	11.1	X	284.41735	272.31600	350.33466	22.07154	0.1187397	0.17213635	3.2005232	17	2 14.9	16.1
3151 Talbot	11.5	X	140.51888	37.91664	212.33477	19.49810	0.1357638	0.21432857	2.7653451	17	11 14.7	15.9
3152 Jones	11.8	X	7.21944	289.69319	301.41191	11.30564	0.0908103	0.23160080	2.6260884	17	4 1.6	15.2
3153 Lincoln	12.9	X	243.51393	348.04825	40.65317	7.71019	0.1294456	0.26140597	2.4224736	17	5 16.1	16.6
3154 Grant	12.9	X	350.21001	306.22825	102.64241	2.47565	0.1734375	0.18076881	3.0978024	17	11 16.9	16.2
3155 Lee	12.3	X	33.54241	28.33896	28.50739	7.20295	0.1005652	0.27490899	2.3424846	17	—	—
3156 Ellington	11.5	X	165.52971	119.34706	6.95222	15.81163	0.1976818	0.20431358	2.8549898	17	7 14.7	16.6
3157 Novikov	11.6	X	311.08307	322.36174	41.65774	7.59917	0.1463546	0.17639629	3.1487855	17	7 13.7	15.8
3158 Anga	12.4	X	338.42614	228.80776	187.44314	14.57772	0.1032826	0.24215928	2.5491887	17	11 15.4	15.3
3159 Prokof'ev	12.1	X	70.31859	58.66971	222.95503	14.59641	0.1066325	0.23907727	2.5710500	17	10 1.4	15.6
3160 Angerhofer	13.4	X	57.47108	331.94888	310.54870	5.07018	0.1560620	0.26893333	2.3770572	17	9 23.7	16.2
3161 Beadell	12.4	X	90.97230	255.53150	351.56373	14.93570	0.1698659	0.23886322	2.5725857	17	9 22.9	16.1
3162 Nostalgia	11.4	X	219.87610	315.88046	128.66316	17.91541	0.1557965	0.17598149	3.1537315	17	7 9.2	16.6
3163 Randi	13.9	X	264.44524	121.52395	194.05133	3.08854	0.3347190	0.26600819	2.3944515	17	2 21.0	18.3
3164 Prast	12.3	X	328.42957	55.45546	64.46995	2.33940	0.1529497	0.17520540	3.1630378	17	—	—
3165 Mikawa	12.7	X	302.09040	239.62484	88.64710	3.92209	0.1785835	0.29309924	2.2445343	17	4 23.2	15.6
3166 Klondike	12.2	X	45.79841	118.57485	71.96115	5.23968	0.1168490	0.29440801	2.2378775	17	4 2.9	14.1
3167 Babcock	11.1	X	186.97261	257.78500	17.64181	15.56309	0.1069951	0.24331799	2.5410892	17	—	—
3168 Lomnický štít	11.8	X	140.25521	286.26981	22.72393	10.54353	0.1001039	0.19047655	2.9916334	17	—	—
3169 Ostro	12.73	X	120.41078	32.62187	96.37611	24.90569	0.0669311	0.37878047	1.8918106	17	4 29.0	15.2
3170 Dzhanibekov	12.4	X	132.14285	80.40475	26.80123	2.01625	0.0880136	0.19666940	2.9284974	17	5 4.9	16.7
3171 Wangshouguan	11.0	X	209.47148	25.55295	31.73741	11.42292	0.1447334	0.17376035	3.1805502	17	5 25.8	16.3
3172 Hirst	13.2	X	209.90137	271.06956	83.37528	3.64915	0.2217819	0.26056720	2.4276694	17	3 4.9	17.3
3173 McNaught	13.0	X	72.44680	219.28355	79.27955	7.79435	0.2101003	0.30118424	2.2041842	17	11 20.3	15.9
3174 Alcock	12.0	X	296.19790	4.60881	72.24372	2.37154	0.1738774	0.17661590	3.1461749	17	9 21.0	16.1
3175 Netto	13.5	X	165.77241	190.34315	208.25030	0.64343	0.2113831	0.27089754	2.3655529	17	3 16.9	17.1
3176 Paolicchi	11.2	X	170.54338	25.59611	53.20895	18.11443	0.0313643	0.20211701	2.8756375	17	5 8.8	15.2
3177 Chillicothe	11.7	X	221.32870	40.88198	35.04875	15.96372	0.1493169	0.23073374	2.6326632	17	6 26.0	16.1
3178 Yoshitsune	12.1	X	93.63682	242.54457	241.37351	6.79643	0.1272646	0.22023111	2.7157114	17	5 18.2	15.6
3179 Beruti	12.0	X	138.21666	277.02379	179.55509	1.76042	0.1604335	0.18141802	3.0904077	17	5 9.4	16.6
3180 Morgan	13.9	X	153.25752	44.48659	354.21073	5.27268	0.1747961	0.29574399	2.2311329	17	2 19.9	16.6
3181 Ahnert	12.6	X	9.53723	304.92391	221.13700	3.95793	0.0651121	0.29613450	2.2291710	17	—	—
3182 Shimanto	11.8	X	275.47142	162.11447	248.33594	12.56078	0.1432478	0.23327245	2.6135275	17	7 19.3	15.6
3183 Franzkaiser	12.7	X	329.57323	219.32603	128.60875	2.18903	0.1383417	0.17348974	3.1838567	17	7 21.2	16.6
3184 Raab	12.2	X	223.80909	238.00940	97.16711	8.19356	0.2630110	0.22622067	2.6675620	17	2 27.0	17.0
3185 Clintford	13.8	X	235.92127	281.74663	71.24066	3.96005	0.1930170	0.27066431	2.3669117	17	3 23.1	17.6
3186 Manuilova	12.7	X	357.21437	205.07120	169.98686	0.80158	0.1797588	0.18013615	3.1050514	17	10 15.5	15.8
3187 Dalian	13.2	X	169.02623	105.83778	312.30815	2.75579	0.0579624	0.28554581	2.2839444	17	3 26.0	16.2
3188 Jekabsons	13.5	X	61.06443	22.88962	336.48688	4.69463	0.1343348	0.28453108	2.2893713	17	—	—
3189 Penza	12.8	X	50.01772	189.92971	177.54351	8.22361	0.1977640	0.18086306	3.0967262	17	—	—
3190 Aposhanskij	12.9	X	192.07073	358.84792	358.32422	9.97315	0.1126845	0.18966744	3.0001355	17	2 28.6	17.5
3191 Svanetia	12.2	X	64.85642	184.58163	50.75309	2.73457	0.0118203	0.20233905	2.8735334	17	7 13.5	16.1
3192 A' Hearn	13.6	X	251.29048	91.58411	56.72572	2.87908	0.1685625	0.26887257	2.3774153	17	10 29.8	16.7
3193 Elliot	13.2	X	128.21187	76.64147	11.77468	5.72818	0.1058492	0.28324795	2.2962801	17	3 23.3	15.8
3194 Dorsey	12.0	X	192.00779	257.59073	64.35073	10.95522	0.1034605	0.18880857	3.0092268	17	1 17.5	16.8
3195 Fedchenko	12.5	X	309.86623	59.42101	274.63007	0.86453	0.0605087	0.19843792	2.9110719	17	6 11.6	16.4
3196 Maklaj	11.9	X	167.93810	321.28332	13.12101	8.97523	0.0268781	0.18716898	3.0267749	17	—	—
3197 Weissman	11.6	X	184.40568	313.47878	111.65323	16.40591	0.1804777	0.22641335	2.6660484	17	5 15.9	16.3
3198 Wallonia	13.1	X	13.06033	40.58692	83.58037	17.95796	0.2380555	0.30609765	2.1805333	17	—	—
3199 Nefertiti	14.84	X	221.89650	53.41123	340.01277	32.96204	0.2841210	0.49887023	1.5745060	17	3 18.0	17.2
3200 Phaethon	14.6	X	261.42479	322.17357	265.23070	22.25322	0.8899365	0.68767633	1.2711984	17	12 11.	

ELEMENTS AND OPPOSITION DATES IN 2017
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Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3201 Sijthoff	13.5 ^m	X	121.26130	53.26956	109.47342	2.99032	0.0875321	0.29053669	2.2577130	17	6 24.4	16.3
3202 Graff	10.9	X	295.10301	268.81413	205.14297	11.10725	0.1148272	0.12620306	3.9363115	17	11 8.8	16.2
3203 Huth	13.8	X	115.82355	305.34324	48.42257	6.66900	0.2638497	0.27855712	2.3219875	17	—	—
3204 Lindgren	12.2	X	291.94194	298.32548	108.70325	2.06304	0.2792606	0.17561130	3.1581620	17	7 22.0	16.7
3205 Boksenberg	13.2	X	163.80657	282.38355	120.20198	12.28779	0.1976687	0.22394123	2.6856331	17	3 31.6	17.7
3206 Wuhan	13.3	X	0.10003	355.69735	71.12897	8.66122	0.2349712	0.24171002	2.5523464	17	—	—
3207 Spinrad	12.4	X	347.25111	155.80822	167.80037	2.22005	0.0602948	0.19873485	2.9081716	17	7 21.9	16.1
3208 Lunn	12.2	X	266.15158	27.16511	136.57111	2.33562	0.1030196	0.17842967	3.1248176	17	12 7.4	16.5
3209 Buchwald	13.4	X	332.46300	30.95361	128.28109	5.23223	0.0528920	0.30366346	2.1921707	17	—	—
3210 Lupishko	10.8	X	338.32519	24.85376	128.13096	13.60404	0.0489522	0.17947654	3.1126545	17	—	—
3211 Louispharailda	12.7	X	115.31518	83.79522	337.30876	10.48916	0.2480760	0.21747534	2.7386048	17	3 5.1	16.4
3212 Agricola	13.5	X	180.13657	35.06416	109.97016	7.81018	0.1514048	0.29078894	2.2564071	17	8 14.7	17.0
3213 Smolensk	12.4	X	311.17842	325.99338	33.73033	0.95532	0.1593456	0.17230208	3.1984766	17	7 5.4	16.7
3214 Makarenko	11.4	X	281.99058	156.64644	100.28894	11.49897	0.0619005	0.18853972	3.0120868	17	2 2.9	15.8
3215 Lapko	12.2	X	314.11433	40.76939	67.06434	7.21794	0.0998246	0.17807202	3.1290002	17	12 3.9	16.0
3216 Harrington	13.6	X	354.10247	224.75351	107.88781	4.91063	0.3023108	0.26565154	2.3965941	17	7 22.3	14.5
3217 Seidelmann	14.5	X	9.27156	357.35016	143.51306	6.12978	0.2611126	0.26715040	2.3876216	17	10 1.8	15.8
3218 Delphine	13.9	X	36.25001	242.22693	183.09224	2.70285	0.2174371	0.24651789	2.5190517	17	—	—
3219 Komaki	11.6	X	199.77180	295.04466	289.10523	6.82097	0.1242765	0.18583076	3.0412887	17	12 5.4	16.3
3220 Murayama	13.0	X	297.20168	25.97910	76.70421	6.61554	0.1744830	0.29690778	2.2252988	17	8 21.6	15.4
3221 Changshi	12.9	X	77.11822	233.44624	78.61088	3.65160	0.1535181	0.30115769	2.2043138	17	12 5.2	15.6
3222 Liller	11.4	X	122.48053	129.45022	150.83547	15.97734	0.0626892	0.18144788	3.0900686	17	11 28.0	16.3
3223 Forsius	11.2	X	203.33607	293.67266	168.17951	10.06380	0.1439458	0.23430951	2.6058102	17	7 11.4	15.5
3224 Irkutsk	11.5	X	343.72847	3.96904	227.83962	4.31788	0.1683320	0.21231664	2.7827874	17	2 23.9	15.1
3225 Hoag	13.2	X	220.55102	138.00721	188.86132	25.06255	0.0259884	0.38238834	1.8798923	17	—	—
3226 Plinius	13.2	X	209.22521	305.20418	98.82915	3.06040	0.0737780	0.20231085	2.8738004	17	5 10.3	17.4
3227 Hasegawa	12.6	X	168.61274	331.65296	154.41960	3.91021	0.1357145	0.25759422	2.4463127	17	7 7.5	16.2
3228 Pire	12.8	X	153.24149	189.44882	290.33248	1.92113	0.1332884	0.25503584	2.4626455	17	6 13.0	16.4
3229 Solnhofen	12.8	X	247.23206	18.92076	306.59172	9.45967	0.1531152	0.27989975	2.3145561	17	2 21.7	16.5
3230 Vampilov	11.9	X	5.58564	244.75216	73.62121	15.29527	0.3226814	0.17666377	3.1456065	17	8 24.2	14.6
3231 Mila	13.4	X	244.13138	54.76142	324.33527	6.37387	0.1264164	0.25765944	2.4458999	17	5 2.9	17.2
3232 Brest	11.7	X	99.40847	120.92268	192.08501	9.85456	0.0829688	0.18755970	3.0225700	17	12 11.4	16.3
3233 Krišbarons	13.0	X	331.83039	65.34249	347.68735	3.60196	0.1039240	0.29663900	2.2266428	17	10 31.9	15.0
3234 Hergiani	12.8	X	13.72075	313.65934	77.03748	0.96279	0.1917732	0.18057503	3.1000183	17	12 7.7	16.2
3235 Melchior	13.7	X	105.57245	168.89955	348.18154	13.52385	0.2457346	0.22439590	2.6820041	17	6 26.9	17.8
3236 Strand	13.4	X	14.87450	214.14615	217.29392	1.10825	0.1444716	0.30168532	2.2017429	17	—	—
3237 Victorplatt	10.5	X	224.97852	340.01490	280.30549	9.11197	0.0665270	0.18845192	3.0130222	17	—	—
3238 Timresovia	13.3	X	216.54288	45.05792	11.21047	11.72571	0.1844199	0.22651706	2.6652346	17	5 24.4	17.9
3239 Meizhou	14.1	X	58.81225	239.59540	93.72303	3.01813	0.2214039	0.30524583	2.1845881	17	12 21.6	16.9
3240 Laocoon	10.2	X	187.90356	15.45413	296.28021	2.33481	0.1266413	0.08226930	5.2357333	17	1 23.5	17.7
3241 Yeshuhua	12.3	X	92.27818	313.36420	127.18669	1.65069	0.1517412	0.18479979	3.0525894	17	2 21.9	16.2
3242 Bakhchisaraj	12.4	X	186.88481	243.75009	191.28769	12.38886	0.1600716	0.22471869	2.6794352	17	5 25.8	16.9
3243 Skytel	12.4	X	289.57258	287.78973	349.26166	9.33847	0.1055746	0.18609322	3.0384285	17	3 2.1	16.8
3244 Petronius	13.9	X	320.66782	58.46195	332.26376	3.67548	0.1647066	0.29328693	2.2435767	17	8 28.1	15.6
3245 Jensch	13.2	X	301.57109	82.98117	348.34445	0.32963	0.1639515	0.17859777	3.1228565	17	9 21.9	17.2
3246 Bidstrup	11.5	X	133.63547	326.01751	197.52915	21.79978	0.0331659	0.17288086	3.1913280	17	7 10.1	16.5
3247 Di Martino	13.1	X	175.81846	146.30910	45.60062	3.93428	0.1282704	0.26884928	2.3775526	17	10 10.5	16.7
3248 Farinella	10.7	X	303.60029	316.69552	12.08126	10.90079	0.1512393	0.17187608	3.2037535	17	5 13.9	15.3
3249 Musashino	13.5	X	200.92691	309.95477	76.26158	3.36789	0.2455103	0.27392070	2.3481157	17	4 4.2	17.5
3250 Martebo	11.3	X	266.21734	180.36635	204.08803	9.57524	0.1044821	0.18828595	3.0147926	17	6 15.9	15.9
3251 Eratosthenes	12.8	X	118.28225	236.69936	142.39951	0.72186	0.1577885	0.17944015	3.1130754	17	1 13.8	17.1
3252 Johnny	12.3	X	184.00996	157.83783	326.85129	12.74380	0.1153319	0.22691465	2.6621204	17	7 25.4	16.5
3253 Gradie	13.2	X	119.18179	234.45108	60.07253	7.42039	0.1974513	0.29236232	2.2483044	17	12 27.4	16.8
3254 Bus	11.2	X	182.70659	305.66783	43.47933	4.44625	0.1642576	0.12532031	3.9547747	17	2 23.9	17.5
3255 Tholen	13.4	X	5.25790	79.14271	337.22206	21.35325	0.3639793	0.26972593	2.3723982	17	—	—
3256 Daguerre	12.4	X	213.25096	268.39908	174.29473	7.83821	0.0991036	0.21301498	2.7767021	17	6 30.0	16.7
3257 Hanzlik	13.1	X	91.95314	275.66457	30.29017	5.55926	0.1695133	0.29186510	2.2508572	17	12 13.7	16.3
3258 Somnium	13.1	X	141.13135	296.93220	45.01197	7.55519	0.1968157	0.30090380	2.2055535	17	—	—
3259 Brownlee	10.1	X	141.45153	314.37036	242.50568	15.47966	0.1236485	0.17493315	3.1663188	17	9 2.7	15.4
3260 Vizbor	12.7	X	162.99103	259.43285	249.32614	5.22348	0.0923901	0.29510579	2.2343484	17	7 26.6	15.7
3261 Tyardovskij	11.8	X	281.03152	182.48473	142.96227	2.75084	0.0737387	0.19898815	2.9057031	17	4 23.0	15.9
3262 Miune	11.0	X	106.56613	60.38513	72.90259	9.45710	0.0663649	0.18887385	3.0085333	17	5 7.1	15.1
3263 Bligh	12.9	X	340.30417	10.07931	78.41323	7.73431	0.0676585	0.26269699	2.4145302	17	—	—
3264 Bounty	12.3	X	323.02568	6.61385	140.19058	0.96722	0.1284141	0.17527516	3.1621986	17	—	—
3265 Fletcher	12.9	X	50.10557	297.71805	72.81452	6.93023	0.1430291	0.26332898	2.4106655	17	—	—
3266 Bernardus	12.9	X	266.40912	256.03560	110.62965	26.37501	0.1102033	0.37389601	1.9082510	17	5 12.4	15.9
3267 Glo	12.8	X	141.32089	307.65931	110.51666	24.00943	0.2948193	0.27701310	2.3306077	17	4 6.9	16.8
3268 De Sanctis	13.1	X	275.14028	74.71859	221.63419	6.35125	0.1272487	0.27406508	2.3472909	17	2 14.7	16.7
3269 Vibert-Douglas	12.5	X	78.08594	43.36376	353.46343	17.18720	0.1596658	0.21217576	2.7840191	17	—	—
3270 Dudley	14.2	X	121.14696	326.95012	146.93436	27.68099	0.3305512	0.31305582	2.1481018	17	5 26.1	17.9
3271 Ul	16.6	X	183.35056	159.07843	158.84100	25.07525	0.3959958	0.32363993	2.1010093	17	—	—
3272 Tillandz	13.2	X	282.28159	13.18482	94.06634	3.92454	0.0914934	0.29316369	2.2442054	17	10 31.4	15.6
3273 Drukar	11.4	X	352.15760	223.44455	45.77126	14.07936	0.0247889	0.15697495	3.4034221	17	5 23.8	16.2
3274 Maillen	12.7	X	216.36867	234.39848	27.93338	1.23741	0.1242864	0.17698450	3.1418050	17	—	—
3275 Oberndorfer	13.3	X	322.58052	192.88623	45.33763	8.57431	0.1805678	0.27653986	2.3332658	17	1 20.8	16.6
3276 Porta Coeli	12.4	X	93.30083	340.59822	71.09727	2.67111	0.1638021	0.17833640	3.1259070	17	1 22.3	16.3
3277 Aaronson	11.6	X	93.55810	295.31855	84.99700	8.56938	0.2710092	0.17701917	3.1413948	17	—	—
3278 Běhounek	11.3	X	269.37872	80.28007	78.22782	9.71904	0.0144859	0.17077400	3.2175221	17	12 15.7	15.7
3279 Solon	13.1	X	150.77663	166.76793	191.93261	3.16491	0.1743148	0.30155951	2.2023552	17	—	—
3280 Grétry	12.4	X	116.13279	0.52192	317.14481	2.22874	0.1786199	0.23778906	2.5803273	17		

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3281 Maupertuis	12.9 ^m	X	326.14686 ^o	240.66281 ^o	348.47795	5.99200	0.0978667	0.27355860	2.3501873	17	1 24.7	16.0
3282 Spencer Jones	13.4	X	23.68072	19.61794	162.34153	3.16776	0.0424670	0.30412975	2.1899294	17	2 7.4	15.5
3283 Skorina	12.7	X	93.33265	352.72072	356.66431	6.89854	0.1010795	0.26567762	2.3964373	17	—	—
3284 Niebuhr	12.9	X	319.36327	261.48925	72.50235	6.64891	0.3811159	0.21351420	2.7723722	17	5 4.6	16.7
3285 Ruth Wolfe	12.1	X	147.73595	169.38880	246.09313	20.60078	0.2156447	0.24516128	2.5283360	17	3 16.9	16.4
3286 Anatoliya	12.6	X	240.47992	77.88493	107.42071	13.42492	0.1012281	0.23008747	2.6375907	17	12 10.3	16.4
3287 Olmstead	14.1	X	270.61218	95.64837	213.27271	12.07838	0.3005655	0.27080192	2.3661098	17	2 15.0	18.6
3288 Seleucus	15.3	X	77.17530	349.29461	218.65477	5.93060	0.4562789	0.34004073	2.0328972	17	8 24.4	17.9
3289 Mitani	13.9	X	106.49394	351.85774	46.35336	1.75839	0.2075295	0.27767283	2.3269147	17	—	—
3290 Azabu	12.1	X	18.94214	111.46091	75.12520	2.77115	0.1295487	0.12430380	3.9763059	17	3 27.1	17.1
3291 Dunlap	12.6	X	169.56826	163.43421	151.36777	2.00418	0.1038170	0.17668097	3.1454023	17	—	—
3292 Sather	13.1	X	11.45324	18.83643	36.94005	1.57389	0.1740933	0.17531682	3.1616976	17	—	—
3293 Rontaylor	13.9	X	254.17148	207.78331	9.60440	2.14055	0.1396769	0.26539748	2.3981233	17	—	—
3294 Carlesely	12.8	X	148.22143	154.67369	6.98940	6.97354	0.0712921	0.22254968	2.6968165	17	8 1.4	16.8
3295 Murakami	12.9	X	187.78391	218.05957	168.32908	8.80959	0.2534838	0.22215602	2.7000014	17	3 31.5	17.6
3296 Bosque Alegre	12.2	X	234.69281	269.63898	112.88564	13.90714	0.1954393	0.22778127	2.6553639	17	5 6.5	16.9
3297 Hong Kong	12.3	X	2.33089	289.37380	112.32261	2.37598	0.1732789	0.17749258	3.1358064	17	11 29.5	15.8
3298 Massandra	13.7	X	180.44530	51.34448	285.16604	2.56754	0.1934413	0.27308900	2.3528807	17	1 10.4	17.0
3299 Hall	13.3	X	146.26473	242.23642	251.73143	5.47475	0.0783433	0.28629771	2.2799438	17	6 15.4	16.3
3300 McGlasson	10.3	X	287.34066	263.39534	27.29521	18.75582	0.2038989	0.17485126	3.1673074	17	3 14.1	15.4
3301 Jansje	13.0	X	212.78584	117.86904	136.95542	5.06698	0.1523273	0.29526805	2.2335298	17	—	—
3302 Schliemann	12.7	X	180.35154	169.85377	154.39706	3.38985	0.0979934	0.25659389	2.4526665	17	—	—
3303 Merta	12.1	X	132.76875	279.53884	52.20499	2.76365	0.0745608	0.20005460	2.8953674	17	—	—
3304 Pearce	13.5	X	86.52701	58.63067	320.41921	2.20373	0.2820739	0.18526116	3.0475193	17	—	—
3305 Ceadams	12.2	X	220.57705	240.65487	32.16768	13.44087	0.1555004	0.23493060	2.6012154	17	—	—
3306 Byron	12.7	X	181.08677	64.61974	213.32783	4.52713	0.1445552	0.29253569	2.2474161	17	—	—
3307 Athabasca	13.8	X	30.24712	145.90547	263.17824	6.37299	0.0959887	0.29025322	2.2591827	17	—	—
3308 Ferreri	11.5	X	262.84964	274.03104	172.33054	23.63714	0.1876155	0.17693272	3.1424179	17	8 17.5	16.4
3309 Brorfelde	13.7	X	76.39397	218.43108	29.79671	21.13630	0.0532333	0.40223388	1.8175385	17	9 1.5	15.8
3310 Patsy	10.7	X	295.18676	135.79168	101.43825	11.08745	0.0605999	0.18890105	3.0082445	17	1 24.6	15.1
3311 Podobed	12.2	X	115.02058	9.43473	157.33567	0.93094	0.0414187	0.21173263	2.7879021	17	6 22.3	16.0
3312 Pedersen	11.5	X	129.77957	129.45835	214.46366	9.66621	0.1228998	0.18953980	3.0014822	17	—	—
3313 Mendel	12.1	X	149.51881	346.75070	272.34670	11.40065	0.1305656	0.22778547	2.6553313	17	12 3.5	16.2
3314 Beals	12.9	X	149.04424	46.17716	359.45704	7.40883	0.0447427	0.29823594	2.2186871	17	2 8.7	15.5
3315 Chant	12.4	X	253.99389	59.14232	146.69933	10.03280	0.0849482	0.22964532	2.6409752	17	—	—
3316 Herzberg	11.9	X	12.16653	355.05731	200.29308	8.41339	0.1058536	0.17943756	3.1131053	17	3 10.1	15.7
3317 Paris	8.4	X	229.02631	149.94222	135.89553	27.86423	0.1265704	0.08257779	5.2226854	17	1 30.2	15.8
3318 Blixen	10.9	X	116.45381	49.58480	109.09250	11.57280	0.0496145	0.18895241	3.0076993	17	6 17.6	15.1
3319 Kibi	12.0	X	200.64861	118.55438	269.80656	3.82692	0.1486816	0.17420155	3.1751777	17	4 13.8	17.2
3320 Namba	13.0	X	220.70647	347.60464	218.15573	4.06574	0.0477941	0.25559966	2.4590227	17	12 20.9	16.3
3321 Dasha	12.7	X	122.66498	202.21863	162.63543	7.32570	0.2000452	0.24270441	2.5453701	17	—	—
3322 Lidiya	12.7	X	72.86644	224.29628	250.74345	23.48165	0.2167004	0.26639485	2.3921340	17	1 30.8	15.3
3323 Turgenev	13.5	X	70.14660	23.15039	21.58408	0.71067	0.1859199	0.24046966	2.5611156	17	—	—
3324 Avsyuk	11.8	X	287.69621	178.19116	316.79754	10.76232	0.0247161	0.22220710	2.6995876	17	12 15.3	15.5
3325 TARDIS	11.4	X	45.89487	86.09872	46.24559	22.22144	0.0141597	0.17340938	3.1848402	17	2 23.8	16.3
3326 Agafonikov	13.2	X	230.70861	280.60146	4.39627	3.38284	0.1728051	0.27049513	2.3678985	17	—	—
3327 Campins	11.8	X	263.33908	241.09452	69.73003	1.55781	0.0939084	0.17380464	3.1800100	17	3 17.8	16.7
3328 Interposita	11.5	X	52.38818	275.84818	60.42085	11.44868	0.1104970	0.18809270	3.0168572	17	11 17.7	15.5
3329 Golay	11.5	X	349.25795	67.81016	11.93755	10.39633	0.0863648	0.18995326	2.9971251	17	12 23.9	15.4
3330 Gantrisch	11.3	X	296.09487	305.86419	9.86493	10.26578	0.2014033	0.17581626	3.1557071	17	4 12.7	16.0
3331 Kvistaberg	13.4	X	258.28570	304.55458	168.42800	3.56624	0.0876356	0.26180269	2.4200257	17	10 2.6	16.6
3332 Raksha	11.5	X	128.99948	277.27546	138.76376	14.84569	0.0844360	0.24263378	2.5458640	17	2 15.1	14.8
3333 Schaber	11.7	X	297.82445	66.10046	231.16797	11.96231	0.2222014	0.17752534	3.1354207	17	3 17.7	16.7
3334 Somov	11.7	X	326.33298	187.04858	86.50517	3.25969	0.0251304	0.20483890	2.8501065	17	4 20.6	15.5
3335 Quanzhou	12.1	X	103.92941	179.69151	278.15391	13.29776	0.1257184	0.23340664	2.6125258	17	3 8.1	15.6
3336 Grygar	14.4	X	358.05014	123.91988	242.70032	0.85842	0.1873497	0.27813754	2.3243221	17	10 12.9	16.0
3337 Miloš	12.5	X	202.73702	221.06652	178.98952	1.99112	0.0770808	0.20548733	2.8441075	17	4 27.4	16.6
3338 Richter	14.3	X	45.97262	177.76782	126.18793	0.73534	0.1694410	0.31337643	2.1466364	17	10 14.7	16.0
3339 Treshnikov	11.2	X	332.73437	148.21507	84.75647	17.81027	0.1347478	0.17382086	3.1798120	17	3 7.5	15.8
3340 Yin Hai	13.3	X	164.77134	283.45571	35.61887	5.60285	0.1949165	0.29536038	2.2330643	17	—	—
3341 Hartmann	12.2	X	344.27706	235.55555	141.97342	10.44606	0.2388765	0.18773413	3.0206975	17	9 22.3	15.1
3342 Fivesparks	12.1	X	176.77334	312.58419	144.18029	6.18755	0.0840503	0.17773541	3.1329496	17	6 13.0	17.0
3343 Nedzel	13.1	X	264.01737	229.70733	43.46048	25.01059	0.3117020	0.27371044	2.3493180	17	1 2.6	17.8
3344 Modena	12.9	X	98.31878	206.42568	77.85542	9.43451	0.1175942	0.26236942	2.4165396	17	11 16.8	16.2
3345 Tarkovskij	11.8	X	296.00225	194.43202	304.89285	15.85049	0.1899174	0.25345381	2.4728826	17	12 19.1	14.5
3346 Gerla	10.8	X	213.10541	20.04838	2.68072	21.48363	0.0452653	0.17322801	3.1870630	17	4 14.9	15.8
3347 Konstantin	11.8	X	205.70974	221.88429	193.40281	4.77922	0.1049123	0.17849342	3.1240735	17	5 22.9	16.7
3348 Pokryshkin	11.9	X	313.05367	62.27568	185.83453	10.39349	0.1634004	0.17429082	3.1740935	17	2 14.1	16.6
3349 Manas	12.5	X	151.05403	147.89741	58.55405	4.23640	0.0306958	0.21737939	2.7394106	17	9 29.1	16.3
3350 Scobee	14.5	X	200.69888	330.81102	353.72232	3.40964	0.2053655	0.28069942	2.3101581	17	1 14.6	18.1
3351 Smith	12.9	X	328.24339	182.12595	185.81191	13.24473	0.2707744	0.18605071	3.0388913	17	7 23.4	16.5
3352 McAuliffe	15.8	X	73.07042	15.94139	107.36920	4.77272	0.3690801	0.38265665	1.8790134	17	—	—
3353 Jarvis	13.6	X	158.83769	34.80304	245.59601	21.80854	0.0847600	0.38762299	1.8629293	17	—	—
3354 McNair	13.1	X	48.26213	326.50062	321.13351	6.41008	0.0962071	0.27808207	2.3246312	17	9 7.2	15.5
3355 Onizuka	13.6	X	206.24642	299.97257	140.58832	4.06526	0.0668085	0.30494922	2.1860044	17	6 12.9	16.4
3356 Resnik	13.1	X	28.50269	157.81423	108.29510	4.09628	0.1136010	0.30357239	2.1926091	17	6 27.6	14.6
3357 Tolstikov	11.7	X	118.34011	59.26697	145.37843	11.25848	0.0558780	0.18770642	3.0209948	17	8 18.5	15.9
3358 Anikushin	12.6	X	257.62334	274.11103	147.03374	2.10328	0.2057729	0.17378556	3.1802426	17	7 11.9	17.6
3359 Purcari	13.8	X	132.75437	43.49140	24.87895	5.73760	0.1215065	0.29061570	2.2573037	17	3 4.0	16.4
3360 Syrinx	15.9	X	108.01339	63.45308	242.55230	21.15978	0.					

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3361 Orpheus	19.03	X	259.92905	301.76441	189.39958	2.68475	0.3227385	0.74069232	1.2097923	17	10 26.8	15.8
3362 Khufu	18.3	X	276.53190	55.04816	152.44780	9.91682	0.4685675	1.00129669	0.9895267	17	—	—
3363 Bowen	12.1	X	183.91058	312.35842	183.17090	3.33176	0.1021114	0.21312885	2.7757130	17	8 5.3	16.3
3364 Zdenka	13.5	X	41.16824	108.36531	145.99799	5.54907	0.1042000	0.30232887	2.1986173	17	7 3.6	15.4
3365 Recogne	12.4	X	345.57184	108.57497	189.34615	7.80050	0.1733013	0.22069000	2.7119454	17	5 30.6	15.4
3366 Gödel	11.5	X	83.28004	148.28434	180.06663	9.96007	0.0864747	0.18924560	3.0045921	17	12 12.6	16.0
3367 Alex	12.3	X	180.67280	237.17023	258.17872	5.31949	0.0691819	0.21216762	2.7840902	17	7 31.6	16.5
3368 Duncombe	10.9	X	51.71181	351.56469	4.10899	19.14655	0.0889581	0.15805883	3.3878451	17	11 28.5	15.9
3369 Freuchen	12.2	X	337.50188	142.10923	267.43121	7.97889	0.1398994	0.18575308	3.0421366	17	10 22.9	15.9
3370 Kohsai	13.5	X	157.39991	301.01597	144.60113	7.11224	0.1097030	0.29886621	2.2155668	17	4 26.9	16.5
3371 Giacconi	12.0	X	330.86354	340.81790	293.61070	9.66677	0.0134756	0.21748086	2.7385585	17	4 21.2	15.9
3372 Bratijchuk	12.1	X	70.11853	19.28771	19.28165	3.28088	0.1417057	0.22299815	2.6931996	17	—	—
3373 Koktebelia	13.4	X	145.26116	251.26491	177.26726	3.20212	0.1304451	0.29274767	2.2463310	17	3 19.7	16.0
3374 Namur	12.7	X	148.27029	143.66821	77.36429	3.02181	0.0124342	0.19460069	2.9492153	17	10 9.2	16.8
3375 Amy	13.9	X	183.13058	352.54166	169.25488	1.07979	0.0255694	0.30791324	2.1719533	17	9 8.9	16.4
3376 Armandhammer	12.4	X	56.94336	328.18300	250.07098	6.34764	0.0662991	0.27385007	2.3485194	17	6 5.5	15.0
3377 Lodewijk	12.6	X	117.37966	200.03676	215.95107	1.30048	0.0581118	0.19802615	2.9151060	17	2 6.9	16.4
3378 Susanvictoria	13.5	X	318.85380	91.69255	335.96617	8.07568	0.0922703	0.27957113	2.3163695	17	10 26.7	16.0
3379 Oishi	13.2	X	215.02495	303.96112	146.76800	2.85110	0.1317675	0.27285682	2.3542153	17	7 7.5	16.6
3380 Awaji	12.2	X	124.38815	21.81838	92.88664	3.23765	0.0267602	0.20560882	2.8429871	17	4 26.6	16.2
3381 Mikkola	13.2	X	249.46101	134.99567	257.79422	4.21474	0.2062971	0.25654600	2.4529718	17	5 23.2	17.1
3382 Cassidy	12.9	X	195.96467	346.87172	357.80032	6.00409	0.1837497	0.29355020	2.2422350	17	2 1.1	16.2
3383 Koyama	12.2	X	296.91285	137.97959	139.16971	14.58961	0.0465532	0.23972976	2.5663827	17	3 8.7	15.7
3384 Daliya	13.8	X	208.16674	263.40722	139.44225	2.75891	0.2100429	0.26761877	2.3848350	17	4 30.3	17.7
3385 Bronnina	12.3	X	277.72709	68.18276	197.69170	6.80391	0.0142869	0.29778238	2.2209394	17	1 10.4	15.2
3386 Klementinum	12.7	X	90.32014	214.38358	168.45410	2.16407	0.0882278	0.20629772	2.8366544	17	—	—
3387 Greenberg	12.4	X	243.35566	115.06811	216.72987	12.87377	0.1865085	0.23474768	2.6025665	17	3 2.9	16.9
3388 Tsanghinchin	12.9	X	283.92038	17.25171	98.98787	24.97043	0.1998119	0.27112101	2.3642529	17	11 7.8	16.2
3389 Sinzot	12.5	X	162.11573	269.28522	150.05084	7.06116	0.1375399	0.21322041	2.7749183	17	4 13.3	16.8
3390 Demanet	13.3	X	271.16836	259.75670	342.86605	3.8972	0.1153656	0.29155671	2.2524441	17	—	—
3391 Sinon	10.3	X	184.24664	103.24897	341.11020	14.86971	0.0819090	0.08069404	5.3036528	17	6 12.7	17.8
3392 Setouchi	13.7	X	343.36092	240.02205	266.78355	26.32236	0.2803776	0.31489634	2.1397234	17	—	—
3393 Stür	12.3	X	140.41382	105.88439	156.49215	9.65089	0.0640948	0.23698049	2.5861933	17	11 29.4	16.2
3394 Banno	13.1	X	322.62544	335.60897	192.33636	7.09369	0.1973337	0.27947598	2.3168952	17	—	—
3395 Jitka	11.7	X	223.73031	105.36659	4.92318	4.03071	0.0573892	0.21132079	2.7915231	17	8 21.1	15.7
3396 Muazzez	11.0	X	157.40965	316.25338	38.06522	8.34980	0.1843806	0.15818350	3.3860648	17	2 5.3	16.5
3397 Leyla	13.3	X	207.87485	95.31610	25.84587	21.99688	0.2976530	0.27365266	2.3496487	17	8 15.9	18.0
3398 Stättmayer	13.4	X	353.79739	42.51002	64.28581	24.16435	0.2367375	0.28486561	2.2875786	17	—	—
3399 Kobzon	12.6	X	356.99102	354.02217	359.31827	0.13661	0.1821345	0.18104296	3.0946744	17	9 14.6	15.6
3400 Aotearoa	15.5	X	224.22640	253.72229	254.32633	20.22695	0.0987262	0.36613468	1.9351240	17	9 30.4	18.4
3401 Vanphilos	12.3	X	264.27563	108.64278	322.37620	21.79651	0.3600933	0.27063520	2.3670814	17	7 16.1	16.4
3402 Wisdom	15.0	X	221.96915	303.73594	357.86859	4.85403	0.2799520	0.31677896	2.1312374	17	1 1.1	18.6
3403 Tammy	12.9	X	252.72217	95.32687	204.19676	4.57469	0.1962454	0.26316954	2.4116390	17	1 28.9	16.9
3404 Hinderer	12.8	X	53.51323	198.47977	302.51879	10.02137	0.1263865	0.22595993	2.6696137	17	2 19.2	15.7
3405 Daiwensai	12.1	X	270.66455	62.75148	241.88496	13.18800	0.1146360	0.23357283	2.6112864	17	2 25.9	16.4
3406 Omsk	11.7	X	82.34749	310.12122	269.85049	8.35862	0.1317628	0.21084149	2.7957521	17	7 31.7	15.5
3407 Jimmysimms	12.5	X	94.29081	344.22391	102.93642	13.07555	0.1546733	0.22349906	2.6891741	17	2 26.9	15.9
3408 Shalamov	13.2	X	337.76406	203.49079	132.71576	2.85868	0.2266756	0.26983630	2.3717512	17	6 25.3	15.3
3409 Abramov	12.0	X	92.33440	168.57690	211.41513	1.40184	0.0830323	0.20437496	2.8544182	17	—	—
3410 Vereshchagin	13.6	X	54.82320	156.21942	339.67617	4.73459	0.0974219	0.29001903	2.2603987	17	1 25.1	15.7
3411 Debetencourt	13.5	X	141.17369	50.17406	69.31173	5.38757	0.1181543	0.29347518	2.2426171	17	5 23.6	16.3
3412 Kafka	13.4	X	194.88242	117.69999	307.59689	2.97310	0.1042992	0.29707142	2.2244815	17	5 8.5	16.4
3413 Andriana	13.3	X	21.14945	287.79365	306.91272	5.79786	0.1276505	0.39170668	2.2516721	17	4 17.0	15.3
3414 Champollion	13.7	X	298.78277	60.69936	25.03929	5.29683	0.1011065	0.20403939	2.1903633	17	10 23.8	15.9
3415 Danby	11.0	X	85.80890	136.67588	253.96712	1.36699	0.2488490	0.12497015	3.9621587	17	1 15.1	16.2
3416 Dorrit	13.2	X	176.70825	293.72748	19.94446	22.07248	0.2071070	0.37121426	1.9174304	17	—	—
3417 Tamblyn	13.5	X	117.60732	113.27127	88.37973	7.94848	0.2272132	0.26133614	2.4229051	17	9 4.9	17.3
3418 Izvekov	12.3	X	281.35556	285.26332	83.97212	1.89329	0.1878039	0.17586935	3.1550721	17	6 4.7	17.0
3419 Guth	10.9	X	58.13208	224.99163	58.51527	17.48871	0.0644929	0.17114688	3.2128471	17	9 22.8	15.6
3420 Standish	11.9	X	29.78615	22.30487	146.02108	14.30153	0.0801797	0.17998878	3.1067461	17	3 7.1	15.9
3421 Yangchenning	13.7	X	172.52825	205.03170	243.65959	2.46648	0.0931215	0.29531077	2.2333143	17	5 15.4	16.7
3422 Reid	12.1	X	303.27690	199.57298	111.81836	13.92014	0.1489712	0.22306833	2.6926347	17	4 23.4	16.1
3423 Slouka	12.4	X	295.45482	179.15341	335.56427	0.40983	0.0993186	0.18451530	3.0557264	17	—	—
3424 Nuši	12.7	X	14.27293	245.44706	149.95913	6.76869	0.0731888	0.24242016	2.5473594	17	12 11.9	15.9
3425 Hurukawa	11.0	X	66.23526	135.01560	291.51257	9.21233	0.0845010	0.18962713	3.0005606	17	—	—
3426 Seki	12.8	X	315.45657	259.89118	5.57791	13.15066	0.0965930	0.23245364	2.6196613	17	3 11.5	16.2
3427 Szentmártoni	13.7	X	121.88389	76.09190	310.11334	2.60161	0.1347975	0.28618440	2.2805455	17	—	—
3428 Roberts	12.0	X	57.45370	303.56235	230.79756	8.87511	0.1661724	0.22683057	2.6627782	17	4 20.4	14.7
3429 Chuvaev	13.9	X	13.70396	163.06210	180.67459	1.33320	0.1898205	0.27554418	2.3388833	17	10 13.2	15.7
3430 Bradfield	12.4	X	59.07043	278.63953	43.22506	4.42826	0.0978129	0.21503016	2.7593268	17	11 8.5	16.0
3431 Nakano	10.5	X	7.39551	46.03228	312.35770	12.27771	0.0471576	0.18101957	3.0949409	17	9 29.7	14.9
3432 Kobuchizawa	11.9	X	129.37749	250.21775	8.98306	12.99940	0.2560110	0.17369335	3.1813681	17	11 14.5	17.5
3433 Fehrenbach	12.6	X	180.93990	74.65203	336.62190	4.51259	0.1869985	0.26604806	2.3942123	17	4 13.4	16.4
3434 Hurless	13.2	X	160.95985	262.16204	88.15428	3.44861	0.2300594	0.22997016	2.6384876	17	1 22.2	17.3
3435 Bourry	13.1	X	356.55496	297.03137	170.84714	7.22330	0.0455672	0.27826729	2.3235995	17	—	—
3436 Ibadinov	12.5	X	202.46672	133.36114	188.37464	1.74433	0.0578726	0.20349950	2.8625988	17	1 20.3	16.7
3437 Kapitsa	12.9	X	353.62094	79.56753	34.65259	3.93932	0.0747372	0.28793727	2.2712806	17	—	—
3438 Inarradas	11.7	X	21.21245	349.94393	2.44026	15.29557	0.2018052	0.18522434	3.0479232	17	10 27.9	15.3
3439 Lebofsky	12.3	X	206.98686	283.82113	7.84734	4.73563	0.1393240	0.21714916	2.7413466	17	—	

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3441 Pochaina	12.5 ^m	X	271.67747 ^o	270.42559 ^o	112.83731 ^o	2.76367 ^o	0.1882128	0.18056865 ^o	3.1000913	17	6 11.3	17.2
3442 Yashin	11.6	X	333.77621	298.34801	100.18532	12.23551	0.1405760	0.17642004	3.1485029	17	10 10.9	15.6
3443 Leetsungdao	13.1	X	131.34634	112.42058	184.60655	12.70973	0.3062027	0.26625475	2.3929730	17	—	—
3444 Stepanian	12.7	X	336.94756	83.35663	342.71270	6.45744	0.2640897	0.24127000	2.5554487	17	11 18.1	14.5
3445 Pinson	12.5	X	297.72665	200.43541	334.14154	11.27744	0.1233293	0.22354211	2.6888288	17	—	—
3446 Combes	13.2	X	254.49715	94.94569	34.79598	7.68414	0.1567238	0.26889911	2.3772588	17	10 11.5	16.4
3447 Burckhalter	12.3	X	86.25976	164.16562	0.70043	20.71500	0.0289224	0.35089670	1.9907491	17	4 5.8	14.3
3448 Narbut	12.9	X	64.57834	349.21809	45.26195	3.38817	0.1185453	0.30373966	2.1918040	17	—	—
3449 Abell	12.8	X	77.92913	333.18824	81.41345	2.04410	0.1553464	0.18225423	3.0809475	17	—	—
3450 Dommanget	12.5	X	110.54730	334.97966	71.59053	6.46659	0.0634072	0.21672288	2.7449401	17	1 13.9	16.1
3451 Mentor	8.4	X	218.90221	131.99989	179.65938	24.65978	0.0692885	0.08468931	5.1355110	17	2 17.6	15.7
3452 Hawke	13.6	X	281.16319	290.38478	58.78554	2.31625	0.0803365	0.28836390	2.2690399	17	5 8.9	16.3
3453 Dostoevsky	12.1	X	28.81878	319.34335	300.66405	4.51178	0.0860269	0.26731574	2.3866369	17	6 22.5	14.5
3454 Lieske	13.3	X	156.05612	245.20452	193.65261	5.36170	0.1575302	0.28859961	2.2678042	17	4 20.9	16.3
3455 Kristensen	13.1	X	355.97408	0.26969	168.81191	3.55723	0.0645868	0.29337238	2.2431410	17	—	—
3456 Etienнемarey	13.7	X	102.88460	166.30303	78.35251	1.77918	0.0150651	0.30958559	2.1641244	17	9 16.9	15.9
3457 Arnenordheim	12.0	X	257.97466	206.66773	101.29955	3.24704	0.0543266	0.20418466	2.8561914	17	3 6.9	16.2
3458 Boduognat	12.6	X	4.18978	336.34361	156.03840	2.13187	0.1552320	0.25717648	2.4489611	17	—	—
3459 Bodil	12.9	X	29.44051	200.89816	98.59027	5.21998	0.1693252	0.29294480	2.2453232	17	9 5.6	14.6
3460 Ashkova	12.5	X	240.64529	298.69613	82.41704	2.37398	0.2222503	0.17371082	3.1811548	17	5 8.9	17.7
3461 Mandelshtam	13.2	X	296.61985	344.00573	57.89788	3.24587	0.1363382	0.26882927	2.3776706	17	8 10.1	15.9
3462 Zhouguangzhao	13.5	X	145.18133	254.70853	113.12580	5.79559	0.2135981	0.25655234	2.4529314	17	1 18.8	16.6
3463 Kaokuen	13.3	X	105.06253	49.03298	50.86435	3.02557	0.1348198	0.25741513	2.4474472	17	3 17.4	16.1
3464 Owensby	13.5	X	23.54362	251.01487	324.65078	6.77184	0.0439534	0.29399501	2.2399728	17	3 28.8	15.9
3465 Trevires	13.3	X	241.57782	138.94894	112.54070	6.07206	0.0519180	0.28000358	2.3139838	17	—	—
3466 Ritina	13.3	X	255.01891	127.97561	104.93117	1.76394	0.1586328	0.27572353	2.3378690	17	—	—
3467 Bernheim	13.3	X	142.24639	349.25556	105.32547	4.11264	0.1495111	0.26349939	2.4096260	17	4 30.2	16.6
3468 Urgenta	11.8	X	141.60182	303.77471	81.07275	10.98701	0.0811359	0.18773257	3.0207141	17	2 7.4	16.3
3469 Bulgakov	11.0	X	355.62177	65.18116	219.31803	9.24339	0.0768262	0.18780595	3.0199272	17	6 12.1	14.9
3470 Yaronika	13.2	X	268.13352	312.65880	237.14118	2.55735	0.1450316	0.27431104	2.3458876	17	—	—
3471 Amelin	11.4	X	226.11975	159.46479	334.86276	15.38881	0.0522443	0.17279666	3.1923646	17	9 18.1	16.2
3472 Uppgren	13.8	X	182.45633	141.25904	242.94560	4.49175	0.1748591	0.21862170	2.7290230	17	3 18.1	18.2
3473 Sapporo	13.5	X	253.01629	57.70916	129.71818	0.96510	0.1577443	0.27139745	2.3626472	17	12 24.4	16.1
3474 Linsley	12.8	X	148.40693	108.58505	169.05928	5.98889	0.2077490	0.24107931	2.5567961	17	12 26.5	17.2
3475 Fichte	11.4	X	244.53864	231.07793	241.95927	14.99855	0.1273575	0.17426422	3.1744164	17	9 1.9	16.6
3476 Dongguan	11.7	X	303.17341	25.73569	43.82585	21.60330	0.1951341	0.17535387	3.1612522	17	9 28.9	16.0
3477 Kazbegi	12.9	X	218.28518	97.58233	186.80849	6.71236	0.1127704	0.27443349	2.3451897	17	—	—
3478 Fanale	12.7	X	156.49992	270.03513	126.45246	3.83967	0.1624252	0.29456291	2.2370928	17	2 22.9	15.5
3479 Malaparte	11.4	X	59.52646	94.74292	196.27548	12.50720	0.0997109	0.18504949	3.0498428	17	9 28.3	15.5
3480 Abante	13.3	X	292.45989	25.71507	187.42173	3.76210	0.2834349	0.18581101	3.0415042	17	—	—
3481 Xianglupeak	13.0	X	277.15025	242.00871	187.10736	5.48425	0.1439790	0.29392230	2.2403422	17	8 16.1	15.6
3482 Lesnaya	12.2	X	32.34154	247.66013	128.76100	4.69851	0.1721670	0.21255576	2.7807000	17	12 22.2	15.7
3483 Svetlov	13.7	X	123.93661	277.40204	85.95228	23.60846	0.1248815	0.36683834	1.9326486	17	—	—
3484 Neugebauer	12.9	X	144.87058	176.47354	116.09630	15.37431	0.1861023	0.23661255	2.5888737	17	—	—
3485 Barucci	12.9	X	356.06439	339.15293	315.32910	1.80094	0.1654348	0.25874387	2.4390610	17	6 8.2	14.9
3486 Fulchignoni	13.5	X	9.86636	18.91340	47.00108	3.20229	0.1800634	0.25991249	2.4317446	17	—	—
3487 Edgeworth	12.5	X	144.03755	115.63716	194.64544	12.43546	0.1744159	0.23429058	2.6059505	17	—	—
3488 Brahic	13.1	X	251.72143	243.52809	142.05749	14.12319	0.1842445	0.23424140	2.6063152	17	5 24.1	17.5
3489 Lottie	13.2	X	141.42180	46.87035	18.15166	6.31296	0.0967215	0.26360349	2.4089916	17	3 13.2	16.3
3490 Solc	13.4	X	241.39815	99.33640	343.96329	5.87552	0.1175275	0.26500649	2.4004816	17	7 29.7	16.8
3491 Fridolin	12.1	X	340.53270	247.74885	161.37128	4.01092	0.0972571	0.21114446	2.7930771	17	11 4.8	15.3
3492 Petra–Pepi	11.7	X	185.23514	97.34051	138.80897	13.62023	0.1434071	0.23281712	2.6169340	17	12 11.4	16.1
3493 Stepanov	13.1	X	247.28391	76.73558	122.14258	5.97479	0.0876913	0.30138024	2.2032285	17	—	—
3494 Purple Mountain	12.7	X	182.42438	72.70456	234.42197	5.83194	0.1309635	0.27371534	2.3492900	17	—	—
3495 Colchagua	11.7	X	154.32322	107.11327	122.30682	2.48432	0.1192130	0.17046408	3.2214209	17	10 31.1	16.8
3496 Arioso	15.3	X	314.16450	283.75784	129.42253	29.71291	0.4581151	0.22044300	2.7139708	17	7 28.4	18.4
3497 Innanen	12.0	X	112.28581	62.17148	161.94626	11.32197	0.1503726	0.22353996	2.6888461	17	9 17.4	15.9
3498 Belton	14.1	X	149.43057	191.15255	223.53751	6.23648	0.1013497	0.27255126	2.3559745	17	3 3.6	17.3
3499 Hoppe	12.6	X	237.95476	189.75513	148.48455	2.22805	0.1682338	0.17919485	3.1159157	17	3 19.6	17.6
3500 Kobayashi	12.7	X	102.37211	10.65104	314.72753	4.25436	0.1967606	0.29411678	2.2393545	17	—	—
3501 Olegiya	11.7	X	82.56150	70.84542	246.15001	4.99275	0.0893685	0.19723683	2.9228782	17	11 28.6	15.8
3502 Huangpu	11.8	X	240.88303	210.77776	104.98590	2.81771	0.1746468	0.17765705	3.1338708	17	2 24.6	17.0
3503 Brandt	13.4	X	114.83223	113.67714	186.90917	11.91561	0.1853961	0.23291442	2.6162051	17	12 24.2	17.8
3504 Kholshchikov	12.0	X	274.94563	164.71127	118.84429	2.04669	0.1790141	0.18028045	3.1033943	17	2 15.9	17.0
3505 Byrd	11.7	X	294.25071	90.70517	302.20751	9.10524	0.1162643	0.18884682	3.0088204	17	7 30.2	15.7
3506 French	11.6	X	290.59636	52.18659	342.79407	9.07813	0.0984440	0.18992474	2.9974252	17	8 2.3	15.7
3507 Vilas	11.4	X	201.18523	183.55389	88.25550	3.24769	0.1575928	0.1778236	3.1323980	17	—	—
3508 Pasternak	12.5	X	308.30995	298.49629	4.75280	6.64007	0.1102776	0.21501397	2.7594653	17	4 17.9	16.1
3509 Sanshui	12.0	X	136.22012	139.09755	219.83832	12.81216	0.1531247	0.23542056	2.5976050	17	—	—
3510 Veeder	12.5	X	294.89910	15.36009	279.72273	5.68825	0.1289869	0.24254803	2.5464640	17	3 12.3	16.2
3511 Tsvetaeva	12.2	X	188.57584	238.17365	229.56979	8.67238	0.2010207	0.21680209	2.7442715	17	7 5.7	17.0
3512 Eriepa	13.8	X	34.96459	300.59797	112.84879	7.48930	0.2480248	0.29228215	2.2487155	17	—	—
3513 Quqinyue	12.9	X	116.35035	359.25598	323.54765	2.64599	0.0123715	0.23114659	2.6295275	17	—	—
3514 Hooke	11.7	X	333.47842	341.74947	24.31635	3.50526	0.1916228	0.12526930	3.9558481	17	8 18.5	16.4
3515 Jindra	12.5	X	266.00878	251.29103	641.65069	1.39183	0.0115046	0.20552478	2.8437621	17	—	—
3516 Rusheva	12.3	X	82.10960	207.60818	161.77681	2.31969	0.0835574	0.20154959	2.8810321	17	—	—
3517 Tatianicheva	13.7	X	62.05515	182.62176	187.17836	3.15446	0.0963616	0.29381823	2.2408712	17	—	—
3518 Florena	12.3	X	57.32133	165.81826	147.85728	13.90979	0.1777708	0.22517805	2.6757899	17	11 13.1	16.1
3519 Ambiorix	13.2	X	39.06694	246.15868	49.71478	0.56645	0.1765688	0.30828862	2.1701898	17	9 19.2	14.8
3520 Klopsteg	13.4	X	70.94160	211.82439	122.70674	4.58376	0.18240					

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3521 Comrie	14.2 ^m	X	313.87905 ^o	34.27460 ^o	58.86951 ^o	3.86989 ^o	0.0672111 ^o	0.28971448 ^o	2.2619825	17	12 2.0	16.6
3522 Becker	12.3	X	156.51371	149.96223	201.80329	8.36161	0.2889764	0.17416955	3.1755666	17	2 1.7	17.8
3523 Arina	12.2	X	331.00810	158.87703	55.66185	9.66821	0.1351022	0.26981429	2.3718802	17	1 6.4	15.5
3524 Schulz	13.3	X	248.97919	329.63807	180.07208	13.05867	0.1282019	0.23303243	2.6153218	17	11 2.9	17.1
3525 Paul	12.2	X	177.86867	188.69565	280.02092	2.54104	0.1036797	0.18229738	3.0804613	17	6 28.7	16.9
3526 Jeffbell	12.4	X	293.63585	243.90377	42.45135	8.49247	0.0934376	0.21116924	2.7928586	17	3 17.6	16.5
3527 McCord	12.7	X	118.51431	355.01020	219.21361	5.51343	0.1213089	0.28403559	2.2920331	17	9 5.2	15.8
3528 Counselman	12.9	X	257.03310	32.03227	276.70589	7.45852	0.1587732	0.24412691	2.5354727	17	2 15.9	17.1
3529 Dowling	14.7	X	119.31041	184.43749	194.00195	2.76442	0.1844822	0.26822388	2.3812469	17	—	—
3530 Hammel	14.1	X	136.84726	76.07934	262.68931	1.17192	0.2269187	0.26525363	2.3989903	17	—	—
3531 Cruikshank	12.9	X	248.27087	299.02670	192.83874	13.12998	0.1474424	0.23197859	2.6232365	17	10 5.1	16.5
3532 Tracie	11.9	X	58.04243	342.13248	56.39022	10.35149	0.0578177	0.19807706	2.9146065	17	—	—
3533 Toyota	12.8	X	88.43285	237.58976	197.18422	4.86968	0.1166188	0.29795206	2.2200962	17	—	—
3534 Sax	12.4	X	230.55588	201.13778	247.09473	7.63826	0.1949911	0.21593263	2.7516331	17	7 17.6	16.9
3535 Ditte	14.5	X	285.25493	163.72872	262.56444	1.57351	0.1854167	0.28276584	2.2988895	17	8 17.9	17.1
3536 Schleicher	14.0	X	135.87985	114.90094	341.02466	6.54817	0.0497256	0.27479940	2.3431074	17	4 3.3	17.0
3537 Jürgen	12.5	X	199.03800	277.59374	44.25308	15.17485	0.1570627	0.23680252	2.5874890	17	1 18.1	16.9
3538 Nelsonia	13.5	X	47.55596	263.21478	170.51899	4.20424	0.2685855	0.22961861	2.6411800	17	—	—
3539 Weimar	12.4	X	164.44462	129.07602	141.18645	13.67047	0.1567051	0.22744371	2.6579905	17	12 30.5	16.9
3540 Protosilaos	9.3	X	138.15730	116.63793	26.41836	23.29206	0.1173650	0.08137740	5.2739197	17	7 9.9	16.9
3541 Graham	12.9	X	221.95939	130.20772	92.26636	4.00507	0.1431170	0.25543947	2.4600506	17	12 31.9	16.5
3542 Tanjiazhen	12.4	X	190.77623	62.05586	266.06250	8.07697	0.0890500	0.17458240	3.1705583	17	1 22.8	17.3
3543 Ningbo	12.0	X	237.73382	109.89250	162.81457	1.04622	0.1714177	0.17403979	3.1771449	17	1 4.2	17.3
3544 Borodino	12.4	X	291.08122	148.79271	147.62647	8.90225	0.2206826	0.26481363	2.4016469	17	2 27.6	15.9
3545 Gaffey	12.2	X	192.62402	255.98675	61.26832	2.97484	0.0585218	0.20287724	2.8684492	17	1 5.2	16.5
3546 Atanasoff	12.2	X	13.70127	248.76371	335.19782	7.02676	0.0270906	0.22286118	2.6943030	17	4 11.9	15.8
3547 Serov	13.5	X	298.23407	161.92741	274.58502	3.90477	0.0516528	0.25278742	2.4772267	17	10 11.1	16.6
3548 Eurybates	9.7	X	220.53667	27.91766	43.54405	8.05948	0.0886946	0.08332653	5.1913523	17	7 3.8	17.0
3549 Hapke	12.4	X	251.09288	209.88679	284.30041	7.55326	0.1674104	0.21493308	2.7601576	17	10 4.2	16.6
3550 Link	11.6	X	31.80232	28.69488	81.19873	14.67133	0.1542979	0.19667858	2.9284063	17	—	—
3551 Verenia	16.75	X	76.57040	193.23895	173.83796	9.51569	0.4878277	0.32574810	2.0919347	17	—	—
3552 Don Quixote	12.9	X	332.46512	316.42068	350.02584	31.09155	0.7088912	0.11213128	4.2591036	17	3 12.5	18.7
3553 Mera	16.4	X	154.57918	288.89682	232.53460	36.77252	0.3201296	0.46735328	1.6445201	17	7 28.6	20.0
3554 Amun	15.82	X	80.29975	359.41018	358.62495	23.36199	0.2804807	1.02591517	0.9736325	17	—	—
3555 Miyasaka	12.9	X	14.10963	310.48091	26.31644	9.47572	0.2369931	0.21801363	2.7340951	17	10 5.6	15.1
3556 Lixiaohua	12.8	X	169.06336	143.69841	240.88797	9.23639	0.2157945	0.17437889	3.1730246	17	3 14.1	18.3
3557 Sokolsky	10.9	X	32.90801	122.09669	185.83795	6.04939	0.1728498	0.12299312	4.0045049	17	9 18.8	15.8
3558 Shishkin	12.6	X	135.95504	303.76556	344.93106	13.39723	0.0652285	0.25835587	2.4415024	17	12 29.5	16.3
3559 Violaumayer	13.9	X	127.38503	70.86294	314.22529	3.81581	0.2152633	0.25153866	2.4854187	17	1 20.6	16.8
3560 Chenqian	10.9	X	349.95458	59.24959	325.19617	9.28844	0.1185512	0.18809321	3.0168517	17	10 10.1	14.6
3561 Devine	11.0	X	61.46248	176.18759	117.84985	9.68163	0.1290718	0.12508113	3.9598147	17	10 11.6	16.5
3562 Ignatius	13.3	X	116.33637	60.71072	92.87659	5.72574	0.1547260	0.27559511	2.3385951	17	6 16.4	16.1
3563 Canterbury	12.6	X	283.52047	346.05660	267.77641	6.95553	0.1810037	0.21145369	2.7903534	17	1 12.8	17.1
3564 Talthybius	9.4	X	34.07518	204.30956	23.78329	15.50768	0.0400772	0.08304213	5.2031987	17	6 4.9	16.3
3565 Ojima	11.9	X	123.77687	345.55575	91.97522	7.33001	0.1187951	0.17111250	3.2132774	17	3 31.7	16.6
3566 Levitan	13.1	X	132.60224	194.18192	289.22672	2.27329	0.1269224	0.27178576	2.3603962	17	5 21.6	16.2
3567 Alvema	13.0	X	238.04880	138.24469	270.98554	6.82290	0.3122395	0.21202163	2.7853682	17	5 31.9	18.0
3568 ASCII	11.8	X	229.24471	280.30602	58.24155	19.43966	0.2376617	0.17632420	3.1496437	17	3 21.1	17.6
3569 Kumon	12.4	X	60.05261	315.13362	161.90194	14.02620	0.1215446	0.23604543	2.5930187	17	1 25.9	15.4
3570 Wuyeesun	11.1	X	193.35529	221.79883	85.01793	11.32244	0.0905967	0.18796002	3.0182768	17	—	—
3571 Milanšćefánik	10.9	X	117.20290	20.61739	248.95858	7.85406	0.1118820	0.12592910	3.9420185	17	11 6.0	16.8
3572 Leogoldberg	12.5	X	59.52802	165.10429	232.70160	3.41319	0.1358339	0.22215495	2.7000101	17	—	—
3573 Holmberg	12.9	X	24.87819	210.28097	268.82684	2.76270	0.0661216	0.29423494	2.2387549	17	—	—
3574 Rudaux	13.5	X	112.89095	144.20010	225.04428	4.66000	0.1850987	0.26211887	2.4180792	17	—	—
3575 Anyuta	12.0	X	76.96560	158.27435	71.20652	7.75892	0.1228340	0.21624100	2.7490166	17	8 9.5	15.6
3576 Galina	13.0	X	99.83473	47.79012	20.44009	10.10242	0.1316504	0.26584141	2.3954529	17	1 21.7	15.7
3577 Putilin	10.4	X	319.26729	179.74661	280.16879	3.74094	0.1967871	0.12565178	3.9478164	17	11 15.3	15.1
3578 Carestia	10.2	X	220.67942	47.93904	284.69825	21.29253	0.2066625	0.17107035	3.2138052	17	2 17.5	16.0
3579 Rockholt	13.6	X	268.24926	108.70057	14.58421	31.06403	0.3564329	0.21797415	2.7344253	17	9 27.0	17.9
3580 Avery	12.9	X	42.26371	179.13177	347.78267	3.40466	0.2406304	0.20436387	2.8545214	17	3 20.8	15.2
3581 Alvarez	12.2	X	311.37792	107.54992	217.46721	28.85956	0.4052897	0.21309395	2.7760160	17	4 8.2	16.6
3582 Cyrano	11.6	X	301.22419	352.53378	59.60774	10.86389	0.0808202	0.18959360	3.0009143	17	9 14.9	15.8
3583 Burdett	13.1	X	23.23357	30.96845	33.24145	2.79788	0.1753065	0.25964639	2.4334057	17	—	—
3584 Aisha	12.2	X	180.63255	108.48447	304.68016	2.12626	0.0999533	0.18169157	3.0873050	17	4 23.0	17.0
3585 Goshirakawa	12.7	X	214.80910	14.35839	162.87771	3.01847	0.1811235	0.18244059	3.0788491	17	10 22.9	17.8
3586 Vasnetsov	13.0	X	124.54357	260.37483	6.68293	9.85445	0.1155861	0.25538968	2.4603703	17	11 17.8	16.8
3587 Descartes	12.7	X	339.44092	25.76025	32.98383	7.82796	0.0396863	0.22164407	2.7041575	17	11 15.4	16.1
3588 Kirik	12.1	X	62.84245	103.88483	329.70634	6.37223	0.1936270	0.17009568	3.2260706	17	1 7.4	15.6
3589 Loyola	13.7	X	66.56931	286.33961	111.35254	4.46427	0.1643098	0.29304832	2.2447943	17	—	—
3590 Holst	13.0	X	358.30170	354.90829	128.65668	6.70585	0.0803283	0.29184769	2.2509467	17	—	—
3591 Vladimirskij	12.1	X	24.57728	261.29925	27.43511	1.14186	0.1386631	0.17481073	3.1677968	17	8 7.9	15.7
3592 Nedbal	13.7	X	221.80625	62.92560	20.58865	9.66478	0.1916153	0.27444904	2.3451011	17	7 3.3	17.6
3593 Osip	14.1	X	248.27245	205.02799	273.89742	1.11965	0.0935105	0.31228360	2.1516416	17	9 27.0	16.5
3594 Scotti	12.9	X	202.78206	162.26937	341.28237	14.63883	0.0302528	0.24449627	2.5329186	17	9 8.0	16.3
3595 Gallagher	12.8	X	145.46655	119.51612	232.82458	2.80115	0.1252509	0.22691800	2.6620942	17	—	—
3596 Meriones	9.2	X	223.45949	66.71241	356.68283	23.53001	0.0729076	0.08387613	5.1686502	17	7 1.1	16.6
3597 Kakkuri	11.8	X	205.72122	301.21469	86.18083	2.51556	0.1889084	0.17486711	3.1671159	17	4 19.5	17.0
3598 Saucier	12.1	X	58.76014	66.02686	161.60632	0.78482	0.0991915	0.17418351	3.1753970	17	7 7.6	16.1
3599 Basov	12.3	X	93.76813	49.19006	163.86060	1.64678	0.1151154	0.17510928	3.1641953	17	8 7.4	16.7
3600 Archimedes	12.8	X	45.61364	146.26								

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3601 Velikhov	12.7 ^m	X	133.89905	357.51036	61.68789	2.28278	0.1473416	0.16788614	3.2543143	17	3 22.1	17.5
3602 Lazzaro	14.1	X	303.22331	232.33141	241.88582	5.58076	0.1322054	0.28886290	2.2664259	17	12 8.8	16.1
3603 Gajdušek	12.7	X	331.09030	346.86537	277.90725	5.22748	0.1258031	0.23926545	2.5697018	17	3 19.9	16.0
3604 Berkhuijsen	13.3	X	37.53942	157.79298	19.93466	12.02614	0.1175645	0.23500676	2.6006534	17	3 18.0	16.1
3605 Davy	12.7	X	342.80221	199.67733	282.59996	3.91618	0.0796030	0.29177655	2.2513126	17	—	—
3606 Pohjola	12.3	X	197.42838	108.48424	250.15267	12.40544	0.2293125	0.23414337	2.6070427	17	2 24.5	17.1
3607 Naniwa	14.0	X	34.30839	127.47576	1.79481	2.84066	0.0688702	0.29273311	2.2464055	17	—	—
3608 Kataev	11.4	X	133.52391	236.26355	78.59329	11.02131	0.1436653	0.15837566	3.3833253	17	—	—
3609 Liloketai	12.2	X	203.94293	31.12925	65.30771	4.85651	0.2443464	0.17891281	3.1191895	17	7 7.3	17.6
3610 Decampos	13.7	X	216.87669	38.67598	115.96701	2.07739	0.0461955	0.31293991	2.1486322	17	10 14.6	16.1
3611 Dabu	12.9	X	260.09902	291.17892	135.67420	8.49420	0.2153160	0.21199499	2.7856015	17	7 18.4	17.2
3612 Peale	13.6	X	79.39610	267.41844	77.33874	3.37439	0.1857452	0.25863870	2.4397222	17	—	—
3613 Kunlun	12.9	X	101.94613	79.57398	72.42674	7.42358	0.0755832	0.27017162	2.3697884	17	5 13.3	15.7
3614 Tumilty	10.5	X	171.73916	311.25419	187.17455	16.71435	0.1282566	0.19136307	2.9823868	17	11 25.7	15.5
3615 Safronov	11.5	X	181.49520	111.98902	234.89782	2.10927	0.1291372	0.17528890	3.1620334	17	12 14.1	16.4
3616 Glazunov	12.3	X	328.32229	118.29831	117.82979	12.76626	0.1248524	0.23491468	2.6013330	17	2 12.4	15.7
3617 Eicher	12.4	X	304.51146	36.59342	181.51913	14.48274	0.1117941	0.23152897	2.6266316	17	—	—
3618 Kuprin	12.5	X	302.43251	100.77859	231.94113	2.02414	0.1776402	0.17593229	3.1543194	17	5 16.2	17.0
3619 Nash	14.0	X	158.56122	181.89509	161.28398	4.04945	0.2392792	0.26721754	2.3872216	17	1 2.6	17.3
3620 Platonov	12.3	X	318.94269	125.56296	272.34947	8.96595	0.1121995	0.19057518	2.9906011	17	9 6.9	16.2
3621 Curtis	12.6	X	232.01855	175.39544	174.75642	2.69533	0.1853905	0.17962145	3.1109802	17	3 27.4	17.9
3622 Ilinsky	11.7	X	267.65396	148.72403	254.27501	4.93426	0.0432752	0.15795993	3.3892591	17	7 20.6	16.5
3623 Chaplin	12.0	X	199.90377	233.97649	118.21330	3.06985	0.0845543	0.20438755	2.8543009	17	2 25.4	16.4
3624 Mironov	14.0	X	213.90583	50.29512	5.94041	4.17125	0.1203413	0.27226021	2.3576533	17	5 20.3	17.5
3625 Fracastoro	11.4	X	347.11350	108.88867	222.31603	5.02907	0.1157591	0.18471473	3.0535265	17	7 27.9	15.1
3626 Ohsaki	12.3	X	259.28674	36.87824	282.77215	4.08141	0.1518340	0.17540325	3.1606589	17	3 16.1	17.4
3627 Sayers	13.7	X	91.87914	126.77482	85.66451	9.71211	0.1472714	0.27388553	2.3483166	17	8 8.3	16.7
3628 Božněmcová	12.8	X	174.61017	187.79415	156.73699	6.88659	0.2987208	0.24374510	2.5381198	17	1 29.0	17.0
3629 Lebedinskij	12.9	X	138.05210	172.78357	235.21981	5.64027	0.1025701	0.26449509	2.4035748	17	2 10.3	16.0
3630 Lubomír	12.7	X	86.29433	324.18345	336.65012	7.41931	0.2053654	0.21387353	2.7692661	17	11 26.9	17.0
3631 Sigyn	11.0	X	45.96924	158.76440	150.88012	14.42296	0.0770582	0.18093786	3.0958726	17	10 4.6	15.2
3632 Grachevka	12.3	X	281.25922	238.61079	201.21427	6.43932	0.3133862	0.21462337	2.7628123	17	8 12.3	16.5
3633 Mira	13.6	X	233.97779	293.62456	230.56979	3.31195	0.1018854	0.28040671	2.3117655	17	11 8.2	16.6
3634 Iwan	13.7	X	288.72934	320.74888	341.63725	4.30272	0.0909106	0.29281273	2.2459983	17	3 11.5	16.5
3635 Kreutz	14.6	X	273.37053	249.10305	235.35097	19.22350	0.0843329	0.40992223	1.7947408	17	11 26.1	15.4
3636 Pajdušáková	13.8	X	352.28108	93.80503	27.02585	4.10434	0.1751867	0.28687514	2.2768833	17	—	—
3637 O'Meara	11.6	X	109.48184	70.33273	207.80163	14.32774	0.1241134	0.24121135	2.5558629	17	11 19.5	15.4
3638 Davis	11.5	X	243.64265	168.65844	109.00855	11.29934	0.0774657	0.18851070	3.0123959	17	1 15.1	16.1
3639 Weidenschilling	13.2	X	185.72544	183.24514	222.57119	2.20355	0.0995634	0.26482305	2.4015900	17	4 7.1	16.4
3640 Gostin	12.5	X	165.17106	155.60767	289.19009	4.31128	0.0866903	0.29705230	2.2245770	17	4 28.1	15.3
3641 Williams Bay	11.5	X	200.98372	293.58854	30.80211	16.12805	0.1297414	0.19055327	2.9908303	17	2 3.4	16.5
3642 Frieden	11.2	X	202.73203	14.70153	131.29760	13.47218	0.0814843	0.21182266	2.7871121	17	9 12.4	15.5
3643 Tienchanglin	13.0	X	142.46408	4.28891	55.78262	13.87570	0.1497777	0.26445378	2.4038251	17	3 22.9	16.5
3644 Kojitaku	13.0	X	115.80564	81.98111	355.33059	5.35357	0.0935333	0.29223077	2.2489791	17	2 12.7	15.3
3645 Fabini	12.3	X	12.98640	109.80437	261.91452	7.13224	0.0825602	0.22211103	2.7003660	17	11 4.2	15.5
3646 Aduatiques	13.0	X	313.76770	41.76287	10.52020	0.58851	0.1067216	0.21555808	2.7548197	17	9 24.6	16.1
3647 Dermott	11.6	X	35.59177	219.55910	126.15187	8.04772	0.1026915	0.21032660	2.8003130	17	11 10.0	15.2
3648 Raffinetti	13.1	X	2.55657	33.55688	208.99871	7.90228	0.1074553	0.26258889	2.4151929	17	4 6.7	15.8
3649 Guillermina	12.1	X	167.12543	92.56652	118.31680	7.16271	0.0471273	0.17673947	3.1447081	17	10 23.3	16.9
3650 Kunming	11.6	X	47.69204	285.14296	36.76187	14.60556	0.2409520	0.17880854	3.1204019	17	11 9.8	15.6
3651 Friedman	13.6	X	69.71981	138.44569	71.61011	7.31980	0.1031712	0.26865610	2.3786922	17	6 20.5	16.1
3652 Soros	13.3	X	2.27694	62.29714	245.39787	2.27165	0.1924633	0.27080420	2.3660965	17	7 10.9	14.9
3653 Klimishin	13.3	X	141.38909	74.07837	182.72261	4.95603	0.0990651	0.29473496	2.2362222	17	11 28.8	16.4
3654 AAS	14.0	X	321.38605	182.64715	200.87548	2.10923	0.2015338	0.28970134	2.2620509	17	8 10.2	15.9
3655 Eupraksia	10.9	X	304.14881	39.57950	338.04468	3.82259	0.2005421	0.12251809	4.0148492	17	7 16.4	16.1
3656 Hemingway	13.4	X	35.37375	301.06089	314.49939	0.80899	0.1399481	0.30124681	2.2038790	17	6 26.5	14.7
3657 Ermolova	12.7	X	49.54204	102.41041	237.28200	5.79196	0.1323062	0.28022149	2.3127841	17	12 1.5	15.4
3658 Feldman	13.4	X	253.52325	106.77665	320.39931	4.01253	0.0648357	0.30491593	2.1861635	17	7 25.4	16.1
3659 Bellingshausen	13.9	X	272.64702	259.78970	189.54525	3.44625	0.1189830	0.24495975	2.5297225	17	9 12.9	17.3
3660 Lazarev	11.7	X	41.66037	215.73381	354.93273	7.78833	0.0824785	0.17055430	3.2202847	17	5 16.5	16.0
3661 Dolmatovskij	12.2	X	63.96123	144.40348	17.64511	1.94217	0.0576577	0.19643564	2.9308203	17	4 11.3	15.9
3662 Dezhnev	12.1	X	224.88692	337.60471	350.80132	13.39857	0.1722398	0.22808351	2.6530176	17	2 19.7	16.5
3663 Tisserand	12.7	X	247.04380	155.85839	107.05615	3.09627	0.1716273	0.17635130	3.1493210	17	—	—
3664 Anneres	12.2	X	36.64167	144.76270	260.49892	3.59826	0.1337939	0.21099289	2.7944145	17	—	—
3665 Fitzgerald	13.0	X	216.03821	280.58167	115.18709	15.06875	0.0889734	0.26212004	2.4180720	17	5 4.8	16.8
3666 Holman	12.2	X	11.85757	55.01138	120.37652	2.36320	0.1280317	0.17897215	3.1185000	17	2 12.9	16.0
3667 Anne-Marie	12.1	X	319.43944	73.94205	0.12042	16.24234	0.2320444	0.18216434	3.0819611	17	10 11.5	15.6
3668 Il'fpetrov	13.2	X	105.01133	32.00581	194.07698	3.07628	0.1031652	0.30451202	2.1880963	17	9 4.0	15.7
3669 Vertinskij	13.1	X	141.76018	34.88812	90.93992	4.82713	0.0707209	0.29920417	2.2138981	17	5 26.6	15.8
3670 Northcott	12.3	X	115.34240	144.65206	107.00945	6.44725	0.0157455	0.21701668	2.7424622	17	10 12.9	16.1
3671 Dionysus	16.5	X	65.73138	204.24726	82.08570	13.53148	0.5411561	0.30221670	2.1991613	17	12 4.3	20.2
3672 Stevedberg	13.1	X	288.64293	32.21212	14.22848	6.29412	0.1397728	0.30553835	2.1831935	17	8 3.6	15.7
3673 Levy	12.9	X	280.29911	45.03499	13.36910	7.09076	0.1851328	0.27447247	2.3449677	17	8 3.6	16.0
3674 Erbsbühl	12.0	X	306.41596	98.24035	296.84557	21.02867	0.3760076	0.27192993	2.3595619	17	7 5.0	15.2
3675 Kemstach	11.1	X	182.75654	174.96691	339.66987	10.85533	0.0877776	0.15933129	3.3697835	17	8 30.0	16.2
3676 Hahn	13.8	X	170.76977	234.05798	359.05262	3.07348	0.0540091	0.31173738	2.1541542	17	12 1.4	16.6
3677 Magnusson	13.6	X	252.87919	125.06449	205.95559	4.29513	0.2004256	0.28874721	2.2670313	17	3 4.1	17.3
3678 Mongmanwai	12.6	X	182.50626	51.44094	142.01330	8.28362	0.1884111	0.24150857	2.5537655	17	10 18.8	16.9
3679 Condruces	13.5	X	211.09916	64.22734	309.16327	3.84776	0.2200812	0.30253252	2.1976305	17	3 19.6	17.0
3680 Sasha	12.9	X	20									

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3681 Boyan	13.4 ^m	X	357.25640	172.53035	132.99182	4.06452	0.1837641	0.29604583	2.2296160	17	6 20.9	14.9
3682 Welther	11.7	X	167.17070	113.87432	255.54030	13.57053	0.3207906	0.21530956	2.7569391	17	2 21.6	16.8
3683 Baumann	11.0	X	182.16286	149.83855	101.85539	15.85732	0.1185882	0.17734564	3.1375383	17	12 21.1	16.0
3684 Berry	13.8	X	325.47459	67.93372	94.97181	6.81124	0.1534144	0.28485602	2.2876300	17	—	—
3685 Derdenye	13.4	X	283.55918	183.57233	202.78753	15.14713	0.1767428	0.22661767	2.6644456	17	6 24.7	17.5
3686 Antoku	12.4	X	210.19551	79.34615	134.57707	5.72026	0.1454251	0.21709841	2.7417738	17	12 5.8	16.6
3687 Dzuz	11.4	X	84.30703	113.78693	224.89018	15.79828	0.2001929	0.21881018	2.7274557	17	—	—
3688 Navajo	15.1	X	114.79653	137.90681	19.96850	2.55946	0.4785150	0.17047898	3.2212332	17	7 30.7	20.9
3689 Yeates	12.2	X	17.55662	163.66058	202.16031	9.34085	0.0842605	0.20163378	2.8802301	17	11 4.2	15.7
3690 Larson	13.5	X	295.04768	35.41422	235.25753	5.03168	0.1656315	0.29294062	2.2453445	17	1 27.1	16.7
3691 Bede	14.7	X	341.02583	234.90845	348.76549	20.36051	0.2843163	0.41701537	1.7743312	17	—	—
3692 Rickman	13.4	X	307.59774	9.84899	219.57423	11.41352	0.1509456	0.21949145	2.7218090	17	1 7.3	17.6
3693 Barringer	11.7	X	105.98231	184.58357	178.86942	14.92236	0.2042360	0.17673096	3.1448091	17	—	—
3694 Sharon	10.5	X	68.61441	80.67219	311.07389	4.97683	0.2054230	0.12645134	3.9311574	17	—	—
3695 Fiala	13.8	X	84.44215	196.99095	177.12140	7.44473	0.2320509	0.27383858	2.3485850	17	—	—
3696 Herald	12.4	X	270.95670	17.81610	312.31609	10.10853	0.1462921	0.17850426	3.1239471	17	4 5.9	17.4
3697 Guyhurst	13.7	X	62.42287	185.97358	351.46080	6.73951	0.0433979	0.27046348	2.3680832	17	4 10.7	16.4
3698 Manning	12.9	X	339.68481	180.74405	132.81618	3.52444	0.1912074	0.29300470	2.2450171	17	5 26.3	15.0
3699 Milbourn	12.9	X	357.14694	232.72073	94.97670	5.71239	0.1860833	0.26530950	2.3986535	17	8 5.1	14.6
3700 Geowilliams	12.5	X	240.61477	153.09046	289.16557	12.12133	0.2258618	0.26269350	2.4145516	17	7 16.3	16.2
3701 Purkyně	12.5	X	68.89481	297.72660	115.61431	4.91566	0.0922547	0.21060006	2.7978884	17	—	—
3702 Trubetskaya	11.6	X	348.38644	254.70262	119.91639	15.64479	0.2383720	0.23248024	2.6194615	17	10 6.7	14.0
3703 Volkonskaya	14.1	X	349.47989	152.38299	172.93703	6.74168	0.1334945	0.27686471	2.3314404	17	7 14.9	16.4
3704 Gaoshiqi	12.6	X	357.60407	36.79833	233.69856	5.89422	0.0503004	0.26345773	2.4098800	17	5 16.9	15.4
3705 Hotellasilla	12.5	X	153.52766	235.33783	154.45559	1.39904	0.1703948	0.17785071	3.1315954	17	3 6.7	17.5
3706 Sinnott	13.7	X	346.13610	310.04154	137.06607	3.50835	0.0977567	0.30420630	2.1895620	17	—	—
3707 Schröter	12.2	X	316.61769	143.08324	281.25748	12.56311	0.1582639	0.23309496	2.6148541	17	10 2.8	15.5
3708 1974 FV ₁	9.2	X	159.86538	57.80371	291.17077	13.36669	0.1576716	0.08269333	5.2178195	17	2 7.0	16.7
3709 Polypoites	9.0	X	186.81603	246.23208	187.13514	19.62072	0.0602992	0.08214704	5.2409269	17	6 4.3	16.4
3710 Bogoslovskij	12.6	X	251.15599	127.18083	198.84865	13.80446	0.1600534	0.21713800	2.7414405	17	3 8.4	17.1
3711 Ellensburg	13.0	X	249.45436	122.75122	312.69302	11.78996	0.1667398	0.22769823	2.6560095	17	7 24.4	17.1
3712 Kriest	11.6	X	73.69221	200.86806	287.90310	31.68368	0.2546794	0.21770464	2.7366815	17	3 9.2	15.3
3713 Pieters	11.5	X	298.45306	212.61335	109.16714	11.37340	0.0971069	0.18765025	3.0215975	17	5 11.4	15.9
3714 Kenrussell	12.6	X	73.40704	22.75626	29.61365	14.36316	0.1773399	0.24031199	2.5622358	17	—	—
3715 Stohl	13.3	X	354.17703	236.80278	145.22045	5.93594	0.0998378	0.27973852	2.3154453	17	10 29.1	15.5
3716 Petzval	13.5	X	34.87641	150.13143	139.01475	2.52407	0.2144659	0.26559474	2.3969358	17	9 5.1	15.2
3717 Thorenia	12.3	X	198.67059	57.36294	101.53619	2.56355	0.1716505	0.17549625	3.1595422	17	9 18.2	17.4
3718 Dunbar	13.0	X	148.70097	228.96274	71.66996	3.55556	0.0545095	0.23051864	2.6343008	17	—	—
3719 Karamzin	13.7	X	354.99276	111.95884	292.46827	2.77329	0.2078247	0.26420173	2.4053537	17	12 6.8	15.4
3720 Hokkaido	13.3	X	245.72325	285.43193	19.26571	6.79254	0.1270578	0.27898197	2.3196295	17	1 30.8	16.8
3721 Widorn	11.8	X	174.22652	151.47936	313.95714	8.76900	0.0854326	0.18804013	3.0174195	17	6 20.1	16.5
3722 Urata	12.6	X	334.29300	136.71746	232.32905	6.46409	0.1998375	0.29482643	2.2357596	17	8 11.7	14.4
3723 Voznesenskij	14.0	X	26.97738	168.23257	95.02460	1.37797	0.1107692	0.29105509	2.2550314	17	6 21.2	15.8
3724 Annenskij	11.6	X	133.42640	117.67241	269.24418	7.73372	0.1647351	0.21446931	2.7641352	17	1 30.9	15.5
3725 Valsecchi	13.8	X	281.54728	17.83860	345.62528	11.40637	0.2039796	0.22441814	2.6818269	17	5 17.3	18.0
3726 Johnnads	12.0	X	80.72845	233.81911	105.35638	3.02605	0.0770429	0.20317122	2.8656816	17	12 22.5	16.1
3727 Maxwell	11.5	X	336.62334	162.00685	161.55953	5.37755	0.1499067	0.16311161	3.3175143	17	6 29.7	15.6
3728 IRAS	11.9	X	276.43535	281.01960	167.37405	22.59520	0.2127585	0.22847445	2.6499903	17	9 2.2	15.7
3729 Yangzhou	11.8	X	43.85705	313.27381	4.66788	13.45782	0.1919989	0.23169894	2.6253468	17	10 24.3	14.9
3730 Hurban	11.7	X	261.45513	42.28862	305.31347	6.93884	0.1612571	0.21882143	2.7273622	17	4 12.1	16.1
3731 Hancock	10.7	X	249.73957	253.84585	264.26249	21.56577	0.1161235	0.16982094	3.2295490	17	11 6.1	15.7
3732 Vávra	14.0	X	214.05170	9.27100	278.42037	1.55737	0.0715405	0.31092774	2.1578921	17	—	—
3733 Yoshitomo	13.0	X	267.20563	211.16072	286.37363	5.86110	0.1928204	0.26525407	2.3989877	17	10 28.7	16.1
3734 Waland	12.8	X	68.74444	296.78298	180.50010	3.48638	0.0518832	0.21632677	2.7482899	17	2 12.8	16.3
3735 Třeboň	11.8	X	294.88808	259.23519	298.19501	5.20845	0.1509311	0.18076743	3.0978182	17	—	—
3736 Rokoske	10.9	X	329.11881	146.82152	145.29834	11.30353	0.0801839	0.18784462	3.0195128	17	5 16.5	15.1
3737 Beckman	12.4	X	21.00033	85.55783	288.19279	20.13115	0.3968813	0.26403466	2.4063682	17	—	—
3738 Ots	12.9	X	86.68843	269.57974	356.90258	1.24831	0.1683518	0.29708065	2.2244354	17	10 17.3	15.6
3739 Rem	13.2	X	98.35627	171.71874	113.39652	4.62218	0.1546903	0.29882837	2.2157338	17	11 24.3	16.2
3740 Menge	14.0	X	238.19276	53.94635	354.71827	5.75145	0.2677499	0.25505599	2.4625159	17	5 29.4	18.3
3741 Rogerburns	13.1	X	174.68256	140.59298	182.41479	6.80891	0.1534431	0.21282656	2.7783407	17	—	—
3742 Sunshine	13.5	X	337.48093	9.12092	163.99073	2.73323	0.1252400	0.24102479	2.5571816	17	—	—
3743 Pauljaniczek	13.6	X	148.47842	72.28739	167.79835	3.32765	0.1489764	0.30158543	2.2022290	17	11 16.2	16.8
3744 Horn-d Arturo	12.9	X	330.98581	185.74539	228.09525	3.75400	0.2776943	0.23127931	2.6285214	17	10 9.1	14.8
3745 Petaev	13.9	X	358.04279	329.58003	356.52394	9.02363	0.2460761	0.26002541	2.4310405	17	8 3.6	15.5
3746 Heyuan	12.7	X	144.51310	304.53807	24.51383	1.02834	0.2494508	0.17413461	3.1759914	17	—	—
3747 Belinskij	10.9	X	8.91070	105.42062	38.20670	24.36133	0.1195829	0.17315917	3.1879075	17	1 1.6	15.4
3748 Tatum	12.6	X	69.88378	110.91733	33.77791	5.97991	0.1515492	0.24422408	2.5348002	17	3 28.2	15.0
3749 Balam	13.3	X	254.23111	173.73714	295.71377	5.38008	0.1094816	0.29460784	2.2368654	17	9 16.3	16.1
3750 Ilizarov	12.1	X	60.26551	197.31425	7.93723	10.42535	0.0490802	0.18799179	3.0179367	17	5 31.1	16.3
3751 Kiang	11.7	X	52.15357	22.04685	271.29174	13.22295	0.1017957	0.17646009	3.1480266	17	9 14.5	16.1
3752 Camillo	15.3	X	283.95556	312.20595	147.97704	55.55657	0.3016541	0.58653512	1.4134269	17	9 23.6	16.5
3753 Cruithne	15.6	X	257.45921	43.83119	126.23442	19.80535	0.5148547	0.98895630	0.9977414	17	—	—
3754 Kathleen	10.4	X	122.43854	55.56973	110.49917	8.45402	0.1082066	0.17565273	3.1576655	17	7 12.2	15.1
3755 Lecointe	13.4	X	330.53327	121.52687	225.82119	7.80445	0.2183366	0.29274852	2.2463267	17	6 25.9	15.6
3756 Ruscannon	13.4	X	26.19607	99.44888	225.83053	3.54794	0.0595425	0.26197166	2.4189850	17	9 21.9	16.2
3757 Anagolay	18.95	X	342.61758	17.14871	74.96879	3.86785	0.4454626	0.39654836	1.8348699	17	—	—
3758 Karttunen	12.7	X	273.81957	56.29631	80.94238	14.14046	0.1138398	0.23111110	2.6297967	17	11 20.7	16.2
3759 Piironen	11.8	X	185.66982	166.30444	292.88235	13.05357	0.1182355	0.21992312	2.7182462	17	6 23.0	16.1
3760 Pout												

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3761 Romanskaya	11.4	X	238.70640	83.81211	207.30646	16.21569	0.2824780	0.17870538	3.1216027	17	1 18.5	17.3
3762 Amaravella	13.5	X	342.33993	189.08397	163.83440	1.45820	0.0788182	0.28744437	2.2738764	17	8 20.2	15.7
3763 Qianxuesen	12.4	X	157.07870	169.71691	23.17489	7.02409	0.1044412	0.29151263	2.2526712	17	9 23.2	15.6
3764 Holmesacourt	13.2	X	264.99080	325.42830	146.13717	4.87697	0.0902650	0.29206026	2.2498543	17	10 12.2	15.9
3765 Texereau	12.8	X	55.33917	180.47025	249.45097	1.02283	0.0386079	0.20563317	2.8427626	17	—	—
3766 Junepatterson	12.0	X	329.39441	359.76754	129.11985	1.48263	0.1058481	0.16942005	3.2346417	17	—	—
3767 DiMaggio	11.5	X	193.74657	74.45476	122.81464	13.69946	0.1367477	0.23444940	2.6047735	17	11 6.4	15.8
3768 Monroe	11.6	X	239.37131	223.62804	147.66095	13.94082	0.2135948	0.18084902	3.0968864	17	4 30.0	17.0
3769 Arthurmiller	13.4	X	206.49580	36.00655	56.56553	4.65311	0.1146914	0.28929358	2.2641760	17	6 30.6	16.6
3770 Nizami	14.3	X	67.79574	20.97186	345.45082	6.35445	0.1808145	0.30333944	2.1937315	17	—	—
3771 Alexejtolstoj	14.0	X	323.78145	137.38292	249.33981	4.54951	0.1689700	0.29695701	2.2250528	17	8 24.3	16.1
3772 Piaf	11.2	X	339.50615	197.53251	101.33151	11.00820	0.0593335	0.18758569	3.0222908	17	6 9.5	15.2
3773 Smithsonian	13.3	X	164.89403	286.72657	63.44643	1.32629	0.1842368	0.30926173	2.1656350	17	—	—
3774 Megumi	11.2	X	154.91887	276.42705	292.08967	9.20649	0.0513438	0.18903104	3.0068748	17	9 29.3	15.8
3775 Ellenbeth	12.8	X	181.04301	313.93071	30.40060	8.25569	0.2315063	0.21192269	2.7862350	17	2 7.6	17.6
3776 Vartiouvuori	10.8	X	332.37371	162.17372	39.64481	27.41368	0.0662897	0.17350140	3.1837141	17	2 10.8	15.8
3777 McCauley	13.1	X	99.49382	300.45572	46.49774	4.19230	0.1625544	0.28699652	2.2762413	17	—	—
3778 Regge	12.6	X	74.38614	97.00853	339.51497	1.36958	0.0391520	0.20259217	2.8711394	17	1 4.3	16.4
3779 Kieffer	11.5	X	282.11287	71.37204	59.25659	13.90100	0.1106801	0.23022160	2.6365661	17	11 21.5	14.8
3780 Maury	12.1	X	231.17230	182.54189	143.60892	2.74047	0.0625094	0.20253132	2.8717144	17	2 26.4	16.2
3781 Dufek	12.4	X	167.29872	156.97482	183.66299	2.04703	0.0754886	0.20560173	2.8430524	17	1 5.8	16.6
3782 Celle	12.6	X	195.09261	334.27617	271.35000	5.24881	0.0935610	0.26254999	2.4154314	17	—	—
3783 Morris	13.0	X	47.31488	256.58529	63.51673	6.17906	0.1732423	0.28784486	2.2717667	17	11 9.1	15.4
3784 Chopin	11.4	X	316.87258	192.40034	94.53139	13.53271	0.1648240	0.17788235	3.1312240	17	4 15.7	15.9
3785 Kitami	12.2	X	142.99751	237.05022	151.03150	1.92249	0.1688004	0.16926101	3.2366676	17	2 23.9	17.2
3786 Yamada	11.2	X	311.99840	356.49162	261.73983	14.31820	0.0811516	0.24197647	2.5504724	17	2 15.9	15.1
3787 Aivazovskij	11.5	X	6.33804	305.66319	185.87954	12.05550	0.1297647	0.20464052	2.8519482	17	—	—
3788 Steyaert	12.1	X	320.56250	106.17163	135.19025	9.68273	0.1059983	0.21130099	2.7916975	17	2 17.1	15.8
3789 Zhongguo	12.7	X	37.19665	313.40141	86.95401	2.74651	0.1842733	0.16545736	3.2860840	17	—	—
3790 Raywilson	12.8	X	67.47096	96.03715	320.36825	0.47583	0.1674907	0.17516370	3.1635399	17	—	—
3791 Marci	12.1	X	188.16316	353.80984	329.77658	1.28306	0.0680218	0.20146521	2.8818365	17	1 8.9	16.2
3792 Preston	13.2	X	182.01491	50.89105	63.32000	23.69718	0.2204704	0.28409026	2.2917390	17	7 5.4	17.3
3793 Leonteus	8.7	X	178.11445	263.09583	200.51625	20.90198	0.0892694	0.08277322	5.2144617	17	6 27.2	16.2
3794 Sthenelos	10.4	X	257.18724	35.30771	343.22305	6.06060	0.1460194	0.08296892	5.2062587	17	6 3.3	17.7
3795 Nigel	12.8	X	131.91348	197.48599	66.00359	9.81155	0.1805870	0.26661719	2.3908039	17	11 27.7	16.6
3796 Lene	11.9	X	137.76158	358.25240	269.45181	6.51926	0.1501972	0.22234073	2.6985059	17	12 3.1	16.1
3797 Ching-Sung Yu	12.9	X	53.69062	261.63441	180.36708	0.84122	0.1409338	0.17062458	3.2194003	17	—	—
3798 de Jager	13.8	X	1.03665	244.98683	134.41489	2.43117	0.0771505	0.30866803	2.1684111	17	1 23.0	16.1
3799 Novgorod	12.1	X	37.01527	94.83950	156.89891	1.35663	0.1408521	0.17613297	3.1519230	17	7 9.6	15.8
3800 Karayusuf	15.0	X	250.49700	115.76006	95.45260	14.84676	0.0756583	0.49728105	1.5778587	17	—	—
3801 Thrasymedes	11.0	X	214.33005	205.26804	209.47516	28.49726	0.0223800	0.08023948	5.3236639	17	6 10.2	18.4
3802 Dornburg	13.8	X	25.84563	146.48120	139.14947	4.43794	0.1640289	0.28543747	2.2845223	17	7 30.8	15.4
3803 Tuchkova	11.1	X	145.83306	275.56142	250.37210	13.04620	0.0516521	0.18519474	3.0482479	17	7 28.1	15.7
3804 Drunina	12.5	X	330.11702	283.68023	21.73860	2.15649	0.0608787	0.19982106	2.8976229	17	6 1.4	16.3
3805 Goldreich	12.7	X	270.29933	64.89111	312.32759	11.81233	0.1899552	0.22428616	2.6828788	17	5 26.6	17.1
3806 Tremaine	14.3	X	122.57595	188.52269	199.47506	10.02329	0.3106093	0.24307015	2.5428161	17	1 31.9	17.8
3807 Pagels	13.1	X	285.05125	129.18524	160.95005	4.29845	0.1679508	0.29127144	2.2539146	17	2 12.3	16.5
3808 Tempel	13.8	X	46.94822	10.83903	153.15712	6.33188	0.1485159	0.28127037	2.3070308	17	2 22.5	15.6
3809 Amici	12.6	X	317.02281	307.65890	124.66356	6.56001	0.1073038	0.22323895	2.6912625	17	10 30.8	15.8
3810 Aoraki	13.3	X	214.98277	288.05388	243.87405	6.82435	0.1086327	0.29208956	2.2497039	17	10 25.6	16.3
3811 Karma	11.8	X	142.97268	67.92298	338.92618	10.18983	0.1296786	0.23803623	2.5785408	17	2 27.9	15.2
3812 Lidaksum	11.3	X	75.33163	36.50770	122.93284	18.40817	0.1188685	0.17434880	3.1733897	17	5 13.6	15.8
3813 Fortov	12.5	X	212.89520	349.49742	319.83832	4.15834	0.1762022	0.30396320	2.1907293	17	—	—
3814 Hoshi-no-mura	13.3	X	180.63168	80.41215	141.46585	1.54832	0.1050579	0.17576129	3.1563651	17	11 15.6	17.1
3815 König	12.3	X	57.93984	9.93391	197.23287	8.64439	0.1060861	0.23929429	2.5694953	17	6 1.6	15.3
3816 Chugainov	11.7	X	262.29190	195.71319	310.97196	12.16718	0.1242335	0.23409238	2.6074212	17	11 9.3	15.5
3817 Lencarter	14.1	X	81.52098	113.03575	151.66743	3.27111	0.1098214	0.28838346	2.2689372	17	9 30.3	16.8
3818 Gorlitsa	14.1	X	180.34454	63.94106	244.03534	2.03901	0.1795779	0.27047233	3.3680316	17	—	—
3819 Robinson	11.9	X	239.93410	352.53638	46.21007	11.11270	0.1383104	0.21362811	2.7713866	17	5 29.4	16.2
3820 Sauval	12.3	X	247.34084	77.04804	320.38302	9.57449	0.1108664	0.18923633	3.0046902	17	6 10.0	17.0
3821 Sonet	12.6	X	69.27028	340.21943	113.33937	0.55375	0.1857767	0.16904600	3.2394115	17	2 12.0	16.4
3822 Segovia	13.7	X	159.41088	280.42855	335.90750	2.55964	0.1173448	0.28824099	2.2696849	17	12 15.4	16.9
3823 Yorii	13.0	X	202.59907	15.51024	112.02560	5.50611	0.2484025	0.18364642	3.0653571	17	8 12.6	18.4
3824 Brendalee	13.3	X	307.73768	107.46289	329.58982	2.79831	0.2369319	0.29118760	2.2543472	17	10 2.2	15.2
3825 Nürnberg	12.8	X	163.24103	145.43328	75.21081	5.14635	0.0944791	0.29373117	2.2413140	17	11 5.4	15.8
3826 Handel	13.7	X	324.38348	257.87954	211.17068	4.62161	0.1315470	0.29402837	2.2398033	17	—	—
3827 Zdeněkhorský	13.0	X	312.45645	34.29707	333.52055	4.09706	0.1280510	0.21726249	2.7403932	17	7 20.3	16.3
3828 Hoshino	11.6	X	96.23480	274.96570	222.00423	6.18662	0.0372449	0.17457552	3.1706416	17	4 24.1	16.0
3829 Gunma	12.1	X	128.08091	314.65605	189.53957	7.55209	0.1670796	0.21214057	2.7843269	17	6 24.6	16.4
3830 Trelleborg	11.4	X	344.37310	56.35901	257.70212	9.62653	0.0984148	0.18650790	3.0339230	17	7 1.9	15.2
3831 Pettengill	13.3	X	308.87039	147.66378	151.28264	4.58111	0.1958419	0.30888625	2.1673897	17	3 15.9	16.2
3832 Shapiro	12.5	X	155.74540	358.98302	28.57070	1.04105	0.1738771	0.17668710	3.1453295	17	3 6.9	17.5
3833 Calingasta	15.4	X	49.73852	174.21842	170.16731	12.01805	0.3893884	0.30300859	2.1953281	17	—	—
3834 Zappafrank	13.5	X	48.77416	170.73302	55.46296	14.06962	0.1935684	0.24190034	2.5510074	17	6 21.8	16.0
3835 Kolenko	12.3	X	27.73632	232.54593	175.48901	12.61365	0.1570997	0.22567593	2.6718529	17	—	—
3836 Lem	13.6	X	192.90052	204.88908	78.15710	2.03665	0.1464026	0.29436166	2.2381124	17	—	—
3837 Carr	12.8	X	180.32372	41.76943	233.67988	4.82471	0.0699147	0.26097500	2.4251398	17	—	—
3838 Epona	15.6	X	277.77815	49.67912	235.51105	29.20909	0.7023325	0.53390564	1.5048494	17	—	—
3839 Bogaeyskij	13.1	X	31.58567	36.53459	240.64746	2.68867	0.1827938	0.25706171	2.4496900	17	8 2.4	15.2
3840 Mimistrobell	13.2	X	136.32889	167.81129	42.29252	3.91838	0.0823058					

ELEMENTS AND OPPOSITION DATES IN 2017

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3841 Diccico	13.1 ^m	X	305.67507	359.76406	46.07889	5.22411	0.1607433	0.28744837	2.2738553	17	8 27.8	15.4
3842 Harlansmith	12.9	X	66.82460	112.66170	345.42353	4.06050	0.1178047	0.27278561	2.3546250	17	—	—
3843 OISCA	10.7	X	16.94979	24.25679	28.31245	3.92578	0.1437113	0.12356892	3.9920552	17	12 25.2	15.7
3844 Lujiaxi	11.7	X	275.75117	230.27581	137.97589	3.83004	0.1036591	0.21831199	2.7316035	17	6 3.9	15.6
3845 Neyachenko	11.9	X	311.61743	260.78602	187.25536	5.97382	0.1571973	0.15499518	3.4323423	17	10 29.1	16.2
3846 Hazel	12.1	X	349.22357	285.97846	223.59987	9.04240	0.0841403	0.19579148	2.9372452	17	—	—
3847 Sindel	11.9	X	243.48485	330.54551	66.81435	3.42786	0.0938848	0.17741649	3.1367029	17	6 8.8	16.5
3848 Analucia	12.6	X	25.81608	61.60301	185.61543	3.48828	0.0959254	0.25652198	2.4531249	17	5 30.4	16.0
3849 Incidentia	13.9	X	293.73864	78.08678	25.92715	5.77554	0.0483478	0.25316031	2.4747935	17	11 12.7	16.0
3850 Peltier	13.5	X	126.83735	207.30402	124.12692	5.26868	0.1622295	0.29512985	2.2342270	17	—	—
3851 Alhambra	13.1	X	188.87898	97.43780	344.66485	4.62761	0.0646172	0.30741255	2.1743109	17	5 21.4	15.9
3852 Glennford	12.1	X	321.29945	127.34420	254.85210	1.25063	0.1949473	0.18016906	3.1046733	17	8 14.1	15.9
3853 Haas	12.7	X	208.25398	283.50164	142.86380	9.08216	0.1369425	0.20948975	2.8077657	17	6 5.4	17.4
3854 George	14.1	X	146.45578	87.58575	8.40560	24.20853	0.1341728	0.37862021	1.8923444	17	4 7.8	15.9
3855 Pasasympsonia	13.0	X	75.48625	233.89162	105.96759	6.83874	0.2096460	0.29453700	2.2372240	17	—	—
3856 Lutschij	12.0	X	82.31719	57.96372	348.34769	1.44602	0.0579910	0.20210983	2.8757056	17	—	—
3857 Cellino	13.4	X	330.90251	178.36581	48.93651	3.08935	0.1601769	0.26613775	2.3936743	17	1 20.6	16.5
3858 Dorchester	13.7	X	222.16591	335.22932	347.96143	7.71127	0.2433210	0.30425580	2.1893245	17	1 29.6	17.3
3859 B6rning	12.0	X	163.11271	348.57438	126.12111	2.88492	0.1407811	0.17259548	3.1948448	17	6 23.7	17.1
3860 Plovdiv	11.6	X	213.35011	44.11729	289.60174	8.12079	0.1548301	0.20958203	2.8069415	17	2 13.8	16.3
3861 Lorenz	12.3	X	104.84046	342.94416	198.10605	5.67297	0.1911494	0.24170014	2.5524160	17	7 16.7	15.9
3862 Agekian	12.9	X	45.81278	180.15387	106.59988	8.98804	0.2476583	0.24305653	2.5429111	17	10 3.4	15.7
3863 Gilyarovskij	12.9	X	21.17553	145.96787	176.78239	9.73757	0.1486332	0.27802163	2.3249680	17	9 20.3	14.8
3864 S6ren	13.2	X	135.84548	15.70740	25.26224	3.04452	0.1569927	0.23437693	2.6053104	17	2 17.8	16.6
3865 Lindbloom	12.7	X	203.72283	33.02319	214.48775	6.55591	0.0793770	0.26544673	2.3978267	17	—	—
3866 Langley	11.7	X	250.00053	125.06070	222.17534	3.63959	0.1850707	0.17576364	3.1563369	17	4 7.9	16.7
3867 Shiretoko	13.1	X	136.27997	33.13129	79.92818	6.27611	0.1073602	0.27348384	2.3506155	17	5 10.8	16.1
3868 Mendoza	12.5	X	353.28813	186.19597	171.57368	8.10760	0.0989127	0.27639695	2.3340701	17	9 17.0	14.5
3869 Norton	12.5	X	81.77972	69.29226	248.87387	4.35780	0.1264411	0.25651543	2.4531667	17	12 10.2	15.9
3870 Mayr6	11.8	X	244.81109	65.97854	202.03134	12.35735	0.1664630	0.23227357	2.6210151	17	—	—
3871 Reiz	12.1	X	136.28483	205.80829	273.64304	15.63864	0.0937216	0.17311730	3.1884215	17	5 28.6	16.9
3872 Akirafujii	12.6	X	324.03069	66.12623	94.76097	13.04161	0.2034079	0.22703398	2.6611875	17	—	—
3873 Roddy	12.8	X	140.78081	267.59823	250.05746	23.35691	0.1338530	0.37873008	1.8919784	17	7 6.5	15.3
3874 Stuart	12.4	X	164.85887	315.70954	277.00630	7.68158	0.0492892	0.22434610	2.6824010	17	11 14.9	16.3
3875 Staehle	13.3	X	234.16333	187.86128	131.73293	6.20599	0.1938378	0.29696155	2.2250302	17	2 2.1	16.8
3876 Quaide	11.5	X	162.07547	193.41245	101.48100	11.24934	0.0853576	0.18804942	3.0173201	17	—	—
3877 Braes	12.1	X	297.64449	1.94025	234.49311	14.19786	0.1294021	0.23394589	2.6085096	17	1 3.7	16.2
3878 Jyomun	13.1	X	175.89353	196.52185	158.02595	2.24984	0.1799242	0.17993841	3.1073259	17	2 14.0	18.2
3879 Machar	13.1	X	135.95357	31.78594	322.09054	8.66448	0.2583890	0.27285583	2.3542210	17	—	—
3880 Kaiserman	13.7	X	90.62870	59.27868	276.50352	17.56220	0.0828067	0.36290586	1.9465851	17	—	—
3881 Doumergua	12.9	X	339.01335	39.84322	37.23376	3.61420	0.1506021	0.25725345	2.4484726	17	12 16.7	15.0
3882 Johncox	12.8	X	195.36297	75.91462	195.31501	5.00520	0.1356938	0.25669584	2.4520171	17	—	—
3883 Verbano	11.7	X	238.10297	182.11146	169.20977	12.84574	0.1221513	0.23335121	2.6129395	17	3 30.3	15.7
3884 Alferov	13.1	X	178.06197	113.26380	9.49090	1.16161	0.1384156	0.17965901	3.1105466	17	7 17.4	18.0
3885 Bogorodskij	12.7	X	74.51400	153.18435	144.99116	5.32232	0.0709920	0.21557706	2.7546580	17	10 27.5	16.4
3886 Shcherbakovia	12.6	X	331.30049	124.42813	185.31568	5.06484	0.0991683	0.21332752	2.7739894	17	6 3.2	16.1
3887 Gerstner	12.7	X	67.50247	142.13827	191.15216	9.92719	0.1094092	0.19010158	2.9955660	17	12 3.6	17.0
3888 Hoyt	12.8	X	326.31685	97.08054	175.46494	22.17057	0.2533257	0.26612163	2.3937710	17	2 27.5	16.1
3889 Menshikov	13.1	X	102.71115	236.69848	116.39095	3.50335	0.2189374	0.22541718	2.6738972	17	—	—
3890 Bunin	13.8	X	259.58980	71.53680	259.54750	5.21256	0.1401072	0.27692430	2.3311059	17	3 13.6	17.4
3891 Werner	14.4	X	218.80286	346.79980	269.44407	1.59853	0.1776862	0.26417797	2.4054979	17	—	—
3892 Dezs6	12.5	X	36.37527	71.50901	159.55054	13.76379	0.1405745	0.23443022	2.6049156	17	6 2.9	15.5
3893 DeLaeter	13.2	X	255.66050	107.57594	196.75542	23.07979	0.2644187	0.26146068	2.4221356	17	2 1.1	17.9
3894 Williamcooke	12.1	X	241.65103	187.88618	163.10506	13.5836	0.1708575	0.23134688	2.6280096	17	4 1.2	16.4
3895 Earhart	11.9	X	160.29695	8.66995	150.81949	24.34550	0.1808378	0.27331548	2.3515808	17	8 13.7	15.7
3896 Pordenone	11.4	X	132.13340	313.06934	232.80110	9.67678	0.0446447	0.18923649	3.0046886	17	8 5.9	15.9
3897 Louhi	13.0	X	350.55117	149.24174	188.82082	7.09775	0.1574285	0.22297373	2.6933963	17	8 7.6	15.8
3898 Curlewis	12.7	X	160.76066	214.10258	183.82590	0.65322	0.1564751	0.17871003	3.1215486	17	3 21.5	17.6
3899 Wichterle	11.4	X	26.59244	326.15977	82.02622	2.81913	0.1776737	0.17316699	3.1878115	17	—	—
3900 Knezevi6	13.4	X	241.70312	55.76428	338.18657	6.71555	0.1382397	0.27003897	2.3705644	17	5 18.3	17.0
3901 Nanjingdaxue	12.5	X	323.67165	231.66172	8.55263	12.81641	0.2820848	0.23228706	2.6209136	17	1 24.6	16.6
3902 Yoritomo	11.5	X	25.87742	353.56746	293.70798	15.55127	0.0650329	0.17022204	3.2244738	17	7 31.6	15.8
3903 Kliment Ohridski	12.0	X	61.52189	305.99615	342.05916	1.31111	0.0796856	0.19640239	2.9311511	17	9 25.3	15.7
3904 Honda	11.6	X	148.30673	126.21887	312.30043	14.98091	0.0976275	0.24098554	2.5574592	17	4 2.7	15.6
3905 Doppler	12.6	X	320.22545	90.82250	343.32174	14.19176	0.2576511	0.24068790	2.5595673	17	10 12.0	15.1
3906 Chao	10.5	X	274.98132	208.22382	149.14478	26.04993	0.0689262	0.19623475	2.9328202	17	6 1.6	15.3
3907 Kilmartin	11.8	X	42.01950	86.05472	283.66337	11.00935	0.1219067	0.21105597	2.7938578	17	12 19.9	15.4
3908 Nyx	17.3	X	288.11079	126.60965	261.25537	2.18578	0.4595220	0.36839649	1.9271953	17	5 19.5	20.4
3909 Gladys	11.9	X	322.37020	25.96841	218.56800	13.18695	0.1218910	0.23365772	2.6106538	17	2 9.6	15.7
3910 Liszt	11.8	X	132.99116	273.52218	2.60120	8.68753	0.1324967	0.21088633	2.7953558	17	12 5.7	16.3
3911 Otomo	11.4	X	190.88023	133.35842	210.37281	10.74296	0.0979029	0.18612058	3.0381307	17	2 6.3	16.2
3912 Troja	13.1	X	238.70839	59.86063	26.20579	2.40238	0.0319280	0.26923609	2.3752748	17	8 8.0	16.0
3913 Chemin	12.8	X	121.08277	44.11716	155.76593	23.86980	0.2241448	0.27206579	2.3587763	17	9 2.3	16.4
3914 Kotogahama	11.7	X	333.62686	316.48743	321.54565	9.32831	0.0777932	0.18830914	3.0145451	17	4 26.7	16.0
3915 Fukushima	12.3	X	238.57279	143.54098	173.50602	14.43074	0.0409599	0.25870617	2.4392980	17	2 8.7	15.8
3916 Maeva	12.2	X	326.95871	81.54170	28.08937	1.94807	0.1302026	0.16890901	3.2411627	17	12 22.6	16.2
3917 Franz Schubert	13.4	X	277.99712	298.90523	137.11501	2.42750	0.0220055	0.27214839	2.3582990	17	9 19.3	16.2
3918 Brel	12.7	X	214.79514	202.85720	160.68125	7.51147	0.2082902	0.29296378	2.2452262	17	3 13.8	16.3
3919 Maryanning	13.8	X	280.42497	138.14894	158.46782	3.96171	0.1896466	0.29828139	2.2184617	17	2 13.3	17.2
3920 Aubignan	13.0	X	165.33137	237.51952	116.42876	9.03951						

ELEMENTS AND OPPOSITION DATES IN 2017
ECLIPTIC AND EQUINOX 2000.0, EPOCH 2017 SEPTEMBER 4.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
3921 Klement'ev	12.6 ^m	X	212.50755 ^o	216.03548 ^o	155.41852 ^o	12.03305 ^o	0.2842699	0.22822525 ^o	2.6519190	17	4 1.8	17.5
3922 Heather	12.8	X	102.72560	11.22326	350.94344	2.01331	0.2030274	0.17768211	3.1335761	17	—	—
3923 Radzievskij	11.6	X	26.52786	283.20254	152.10128	3.49287	0.2223302	0.12512461	3.9588971	17	—	—
3924 Birch	12.2	X	113.22421	95.14783	331.80750	6.70184	0.1087526	0.22195812	2.7016060	17	2 17.1	15.5
3925 Tret'yakov	11.0	X	41.11491	207.16334	163.67329	15.60812	0.1942331	0.17575460	3.1564451	17	12 25.4	15.4
3926 Ramirez	13.7	X	141.74766	236.23311	239.07437	9.19187	0.1233106	0.24147812	2.5539802	17	5 25.6	17.4
3927 Feliciaplatt	14.0	X	18.57658	26.14110	255.45674	1.95303	0.1354034	0.30334713	2.1936944	17	7 2.6	15.5
3928 Randa	13.3	X	250.08110	54.40751	269.10296	2.45128	0.1894335	0.29261932	2.2469878	17	2 20.3	16.9
3929 Carmelmaria	13.7	X	292.81554	222.08579	153.15152	2.89005	0.1364185	0.26839757	2.3802194	17	6 24.9	16.8
3930 Vasilev	12.7	X	207.54338	247.49176	37.64163	1.22770	0.1612591	0.17859013	3.1229455	17	—	—
3931 Batten	13.6	X	51.14539	151.35176	328.23134	3.80146	0.0820586	0.26600075	2.3944962	17	1 4.6	16.2
3932 Edshay	11.8	X	62.86511	329.10860	324.53472	14.56946	0.1647332	0.23969263	2.5666477	17	10 11.7	15.4
3933 Portugal	12.4	X	29.50730	250.23000	42.72209	1.69219	0.0957015	0.16826467	3.2494318	17	8 18.9	16.4
3934 Tove	12.7	X	35.80052	93.87248	157.62891	13.14256	0.1409382	0.23581295	2.5947227	17	6 30.3	15.6
3935 Toatenmongakkai	11.9	X	92.33925	104.32872	300.47442	8.74405	0.2324793	0.24344812	2.5401836	17	—	—
3936 Elst	13.0	X	282.60618	38.47412	240.73886	5.64582	0.1294111	0.26049359	2.4281268	17	2 3.9	16.7
3937 Bretagnon	11.7	X	24.69604	107.23724	357.71136	8.85211	0.0242131	0.18361483	3.0657086	17	—	—
3938 Chapront	13.7	X	206.39132	76.86461	157.90560	2.08772	0.0401316	0.25092117	2.4894945	17	—	—
3939 Huruhata	11.4	X	184.43551	252.40294	32.45519	24.78028	0.1019808	0.17979106	3.1090234	17	—	—
3940 Larion	12.7	X	350.62443	304.55595	194.71634	22.83881	0.0561604	0.35168439	1.9877755	17	—	—
3941 Haydn	13.0	X	190.04989	285.16586	185.24509	1.66974	0.0235983	0.19685045	2.9267016	17	7 12.0	17.2
3942 Churivannia	13.1	X	333.73338	288.01606	18.27090	4.61917	0.1963651	0.26653483	2.3912964	17	5 6.2	15.8
3943 Silbermann	13.9	X	186.50440	353.98711	7.00701	6.47179	0.1895528	0.28743347	2.2739338	17	2 14.8	17.4
3944 Halliday	13.2	X	356.74624	288.43894	69.58725	7.55033	0.1513419	0.27039605	2.3684769	17	9 29.4	15.3
3945 Gerasimenko	12.4	X	122.07552	333.17392	9.46957	1.83407	0.2037993	0.17919745	3.1158856	17	—	—
3946 Shor	12.3	X	75.53631	272.45622	325.90033	0.73562	0.1283863	0.18136641	3.0909939	17	8 18.5	16.4
3947 Swedenborg	12.2	X	127.47579	100.69366	253.97139	5.38759	0.1512462	0.18097858	3.0954083	17	—	—
3948 Bohr	13.4	X	173.57809	121.08597	190.66695	2.73095	0.1954868	0.28976281	2.2617310	17	—	—
3949 Mach	13.4	X	92.51509	303.92752	249.84067	3.78135	0.0323144	0.30046614	2.2076947	17	6 17.4	15.6
3950 Yoshida	11.9	X	349.67999	279.49902	268.91846	8.92686	0.0544479	0.19026343	2.9938669	17	1 29.6	16.0
3951 Zichichi	12.8	X	354.99678	151.71913	270.03830	5.41330	0.1741783	0.27544457	2.3394471	17	—	—
3952 Russellmark	13.9	X	250.26898	176.13893	288.40167	1.95050	0.1542896	0.26746725	2.3857356	17	8 31.4	17.3
3953 Perth	13.5	X	46.33190	237.98275	129.08090	4.95073	0.1887438	0.28992274	2.2608992	17	—	—
3954 Mendelssohn	14.6	X	197.60417	72.05286	161.67586	3.18685	0.0930767	0.31386246	2.1444198	17	—	—
3955 Bruckner	11.3	X	132.79053	82.98799	23.57795	10.42839	0.0752835	0.18794222	3.0184673	17	5 2.9	15.7
3956 Caspar	12.9	X	249.30911	108.10912	255.28956	4.80899	0.1792788	0.29401300	2.2398814	17	4 10.6	16.4
3957 Sugie	12.6	X	189.32158	313.00070	181.86743	5.72996	0.1988789	0.18237483	3.0795892	17	1 8.9	17.8
3958 Komendantov	12.3	X	154.11107	28.74929	11.72438	4.83198	0.2081330	0.25390510	2.4699515	17	3 11.5	15.9
3959 Irwin	14.0	X	176.56157	198.34539	210.84456	3.28318	0.1872090	0.29015841	2.2596748	17	4 4.6	17.4
3960 Chaliubieju	12.3	X	217.15763	12.60496	84.83892	14.41434	0.2788496	0.22956821	2.6415665	17	7 15.5	17.1
3961 Arthurox	12.0	X	16.05817	327.21439	316.62227	12.65021	0.1522478	0.23206131	2.6226131	17	7 12.8	14.6
3962 Valyaev	12.4	X	293.47069	106.15652	49.68193	1.99843	0.1148475	0.17143929	3.2091928	17	12 30.9	16.6
3963 Paradzhanov	13.5	X	197.61854	285.98742	109.71242	3.27578	0.1964896	0.25854837	2.4402904	17	4 13.6	17.5
3964 Danilevskij	13.0	X	152.17298	8.75088	334.09623	8.66390	0.1679551	0.21546906	2.7555784	17	1 1.6	17.1
3965 Konopleva	12.1	X	245.98893	132.60688	284.68028	12.71923	0.1561561	0.22855005	2.6494059	17	6 27.5	16.1
3966 Cherednichenko	12.1	X	337.10210	15.55604	32.29319	3.52588	0.0220026	0.16941055	3.2347626	17	10 26.7	16.4
3967 Shekhtelia	11.3	X	330.54313	9.86395	101.08711	17.45836	0.0516639	0.16852542	3.2460792	17	—	—
3968 Koptelov	13.0	X	123.37414	312.68642	312.06566	6.20172	0.0915499	0.27860091	2.3217441	17	11 14.7	16.3
3969 Rossi	14.2	X	279.38137	212.29835	172.69652	2.14447	0.1259524	0.29796399	2.2200369	17	6 19.6	16.9
3970 Herran	12.2	X	120.68517	304.20600	21.72792	15.13904	0.1343823	0.24120262	2.5559246	17	—	—
3971 Voronikhin	11.3	X	14.85809	83.50380	284.81853	13.00810	0.1844407	0.20490875	2.8494587	17	11 9.2	14.6
3972 Richard	13.8	X	51.49734	179.26510	163.25658	4.14935	0.1776026	0.30969317	2.1636232	17	12 19.3	16.3
3973 Ogilvie	12.9	X	18.86922	245.06167	70.98573	1.84866	0.2076350	0.27216770	2.3581875	17	9 11.7	14.5
3974 Verveer	12.2	X	169.58259	158.32246	21.22240	13.41548	0.1094862	0.23500372	2.6006758	17	9 20.6	16.2
3975 Verdi	12.3	X	302.01543	246.84786	204.71345	1.29267	0.0541836	0.19967304	2.8990548	17	11 3.6	15.9
3976 Lise	11.7	X	88.43359	103.65799	222.43555	12.71759	0.0711064	0.21515604	2.7582503	17	12 15.7	15.7
3977 Maxine	12.0	X	346.59907	73.81980	218.07167	12.54598	0.1652744	0.22950636	2.6420411	17	5 22.6	14.8
3978 Klepešča	11.7	X	279.74399	220.71359	242.40465	12.16467	0.0049777	0.20133539	2.8830751	17	10 24.2	15.7
3979 Brorsen	12.0	X	35.48246	102.88043	343.99949	3.05653	0.0290114	0.18020577	3.1042517	17	—	—
3980 Hviezdoslav	13.0	X	44.93076	356.50533	74.04901	2.27759	0.1552017	0.17786431	3.1314358	17	—	—
3981 Stodola	11.9	X	37.10911	347.75166	79.68742	2.46040	0.1706892	0.17492357	3.1664344	17	—	—
3982 Kastel	12.9	X	230.45073	50.94920	251.91275	5.29699	0.2196197	0.29037242	2.2585644	17	1 10.5	16.6
3983 Sakiko	12.9	X	20.54470	225.92990	329.18953	2.60770	0.1136195	0.25703419	2.4498648	17	3 1.2	15.3
3984 Chacos	14.4	X	238.25326	263.37315	100.00416	2.93750	0.1812496	0.25903365	2.4372417	17	4 8.5	18.2
3985 Raybatson	11.3	X	197.19667	152.33040	83.98933	16.29733	0.0965220	0.20471002	2.8513026	17	12 20.9	15.7
3986 Rozhkovskij	12.8	X	95.82441	164.03568	281.65507	4.94514	0.1326336	0.29119387	2.2543148	17	1 25.7	14.9
3987 Wujek	12.1	X	184.56633	307.28905	48.51712	4.82853	0.1178425	0.21802244	2.7340215	17	2 14.6	16.3
3988 Huma	17.9	X	61.26468	86.91160	229.81994	10.76797	0.3165518	0.51346361	1.5445297	17	—	—
3989 Odin	13.7	X	26.38759	52.44714	327.53485	3.47212	0.1873883	0.29067737	2.2569845	17	—	—
3990 Heimdal	10.8	X	270.48875	197.84426	192.65963	9.49624	0.2405636	0.12607109	3.9390580	17	6 17.3	16.9
3991 Basilevsky	13.1	X	14.97104	355.95557	282.75996	3.87302	0.1739013	0.29202218	2.2500499	17	6 19.4	14.4
3992 Wagner	11.4	X	295.97320	157.22251	168.80699	10.42112	0.0788169	0.18796488	3.0182247	17	5 14.7	15.8
3993 Šorm	12.7	X	317.32006	247.11846	205.86664	3.06998	0.0736590	0.23918943	2.5702462	17	11 30.3	15.7
3994 Ayashi	12.7	X	285.37388	298.15471	51.88260	3.68426	0.2429009	0.22793022	2.6542069	17	5 3.2	16.8
3995 Sakaino	12.1	X	304.16571	276.93779	99.83194	9.29886	0.0944605	0.23045269	2.6348033	17	7 24.6	15.5
3996 Fugaku	13.0	X	338.49544	156.18306	90.75386	2.28417	0.1037115	0.29014872	2.2597251	17	2 28.8	15.4
3997 Taga	13.6	X	259.54486	310.56067	84.27507	3.62442	0.1732002	0.26112636	2.4242026	17	6 7.5	17.0
3998 Tezuka	12.8	X	129.87619	76.08594	5.54143	6.49080	0.1956617	0.28624520	2.2802226	17	3 28.8	15.3
3999 Aristarchus	12.6	X	122.22013	210.15127	296.61540	2.54200	0.1205632	0.25552793	2.4594828	17	6 11.3	15.8
4000 Hipparchus	12.7	X	297									