Most massive [edit]

Below are the sixteen most-massive measured asteroids.[9] Ceres, at a third the estimated mass of the asteroid belt, is half again as massive as the next fifteen put together. The masses of asteroids are estimated from perturbations they induce on the orbits of other asteroids, except for asteroids that have been visited by spacecraft or have an observable moon, where a direct mass calculation is possible. Different sets of astrometric observations lead to different mass determinations; the biggest problem is accounting for the aggregate perturbations caused by all of the smaller asteroids.[10]

Graphs are temporarily unavailable due to technical issues.

Comparative masses of the asteroids with nominal masses > 20×10^{18} kg, assuming a total Main Belt mass of 2394×10^{18} kg. The mass of Herculina is particularly uncertain.

Asteroids with nominal mass > 10×10^{18} kg

Name	Mass ($\times 10^{18}$ kg)	Precision	Approx. proportion of all asteroids
1 Ceres	938.35	0.001% (938.34–938.36)	39.2%
4 Vesta	259.076	0.0004% (259.075–259.077)	10.8%
2 Pallas	204	1.5% (201–207)	8.5%
10 Hygiea	87	8% (80–94)	3.6%
704 Interamnia	35	14% (30–40)	1.5%
15 Eunomia	30	6% (29–32)	1.3%
3 Juno	27	9% (25–29)	1.1%
511 Davida	27	27% (19–34)	1.1%
52 Europa	24	16% (20–28)	1.0%
16 Psyche	23	13% (20–26)	1.0%
532 Herculina	≈ 23	?	≈ 1%
31 Euphrosyne	17	18% (14–19)	0.7%
65 Cybele	15	12% (13–17)	0.6%
87 Sylvia	14.76	0.4% (14.70–14.82)[11]	0.6%
7 Iris	14	17% (11–16)	0.6%
29 Amphitrite	13	16% (11–15)	0.5%
6 Hebe	12	20% (10–15)	0.5%
88 Thisbe	12	20% (9–14)	0.5%
107 Camilla	11.2	1% (11.1–11.3)[3]	0.5%
324 Bamberga	10	9% (9–11)	0.4%