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## **Planets smallest to largest including sun and moon**

Wikimedia article catalog Solar system Objects from orbit by size of discovery date models Catalogs Gravitational-rounded (balance) objects Possible dwarf planets Moons (natural satellites) Planetary-mass moons Secondary planets Planets Venus Mars Jupiter Saturn Uranus Neptune Solar System portal Star portalvte This is a partial list of objects of the Solar System by size, arranged in descending order of average volumetric radius and divided into different sizes. These lists can also be sorted according to the mass of an object and, for larger objects, the volume, density, and gravity of the surface, to the extent that these values are available. This list contains the Sun, planets, dwarf planets, many of the largest small bodies in the Solar System (which includes asteroids), all natural satellites, and a number of smaller objects of historical or scientific interest, such as comets and objects near Earth. Objects in this list are sorted by the mean radius, not the mass. Thus, objects in the lower parts of the table may be bulkier than objects higher in the list if they have a higher density. Many transne-neptun objects (TNOs) have been discovered. in many cases their positions on this list are approximate, as there is often a great deal of uncertainty in their estimated diameters. The objects of the Solar System more massive than 1021 kg (a yottagram [Yg]) are known or expected to be about spherical. Astronomical bodies relax in rounded shapes (ellipsoids), achieving hydrostatic balance when their own gravity is enough to overcome the structural strength of their material. It is believed that the cut for round objects is somewhere between 100 km and 200 km in radius if they have a large amount of ice in their makeup; [1] however, subsequent studies have revealed that icy satellites as large as Iapetus (1,470 km in diameter) are not in a hydrostatic balance at the moment,[2] and a 2019 assessment shows that many TNOs in the 400-1000 km range may not even be fully solid bodies, much less gravitationally rounded. [3] Objects that are ellipsoid due to their gravity are generally referred to here as 'round', if they are really in balance today, while objects that are clearly not ellipsoid are referred to as 'abnormal'. Spheroidal bodies typically have some polar flattening due to centrifugal force from their rotation, and can sometimes even have quite different equatorial (scalene ellipsoids as Haumea). Unlike bodies like Haumea, irregular bodies have a significantly non-ellipsoid profile, often with sharp edges. There may be difficulty in determining the diameter (within a factor of about 2) for typical objects beyond Saturn. (See 2060 Chiron as an example.) For TNOs there is some confidence in diameters, but for non-binary binary there is no real confidence in the masses/densities. Many TNOs are often assumed to have Pluto's density of 2.0 g/cm<sup>3</sup>, but it is just as likely that they have a comet-like density of only 0.5 g/cm<sup>3</sup>. [4] For example, if a TNO is incorrectly considered to have a mass of 3,59×10<sup>20</sup> kg based on a radius of 350 km with a density of 2 g/cm<sup>3</sup>, but is later discovered to have a radius of only 175 km with a density of 0.5 g/cm<sup>3</sup>, its actual mass will be only 1,12×10<sup>19</sup> kg. The sizes and masses of many of the moons of Jupiter and Saturn are well known due to the numerous observations and interactions of Galileo and Cassini orbiters. However, many of the moons with a radius of less than ~100 km, such as Jupiter's Himalia, have far fewer masses. [5] Further away from Saturn, the sizes and masses of objects are less clear. There has not yet been a orbiter around Uranus or Neptune for a long-term study of their moons. For the small outer abnormal moons of Uranus, such as Sycorax, which were not discovered by the Voyager 2 flyby, even different NASA websites, such as the National Space Science Data Center[6] and JPL Solar System Dynamics,[5] give somewhat contradictory size and albedo estimates depending on what research work is reported. There are uncertainties in the figures for mass and radius, and irregularities in shape and density, often depending on how close the object is to Earth or whether it has been visited by a probe. Graphic overview About sizes of fifty largest bodies in the solar system, colored by the orbital region. The values are diameters in kilometers. The scale is linear. Relative masses of the bodies of the Solar System. Objects smaller than Saturn are not visible on this scale. Relative masses of solar planets. Jupiter in 71% of the total and Saturn at 21% dominate the system. Mercury is not visible on this scale. Relative masses of solid bodies of the Solar System. Earth at 48% and Venus at 39% dominate. Bodies less massive than Pluto are not visible on this scale. Relative masses of rounded moons of the Solar System. Mimas, Enceladus and Miranda are too small to be visible on this scale. A list of objects with an average radius of more than 400 km It was once expected that any icy body greater than a radius of about 200 km was likely to be in hydrostatic equilibrium (HE). [7] However, ceres (r = 470 km) is the smallest body for which detailed measurements are consistent with hydrostatic balance,[8] while Iapetus (r = 735 km) is the largest frozen body found not to be in hydrostatic balance. [9] For reasons of simplicity and comparative the values shall be calculated manually provided that the sphericity is 1. The size of solid bodies does not include the atmosphere of an object. For example, Titan looks bigger than Ganym, but its solid body is smaller. For giant planets, the radius radius is defined as the distance from the centre at which the atmosphere reaches 1 bar of atmospheric pressure. [10] Body[note 1] Image radius[note 2] Volume mass density gravity[note 3] Type # (R/M)[note 4] Discovery (km) (R⊕) (109 km<sup>3</sup>) (V⊕) (1021 kg) (M⊕) (g/cm<sup>3</sup>) (m/s<sup>2</sup>) (⊕) Sun 695508 ±; [11] 109.2[11] 1.409.300.000[11] 1.301.000[11] 1989100000[11] 333.000[11] 1.409[11] 274.0[11] 27.94[11] G2 Αστέρι 1-κατηγορίας V - Δίας 69911±6[12] 10.97 1.431.280 1.321 1898187±88[12] 317.83 1.3262±0.0003[12] 24.79[12] 2.528 γιγαντιάριος πλανήτης αερίου έχει δακτυλίους 2 - Κρόνος 58232±6[12](136775 για τους κύριους δακτυλίους) 9.140 827.130 764 568317± ±13[12] 95.162 0.6871±0.0002[12] 10.44[12] 1.065 γιγαντιάριος πλανήτης αερίου 1.065 έχει δαχτυλίδια 3 - Ουρανός 25362±7[12] 3.981 68.340 63.1 86813±4[12] 14.536 1.270±0.001[12] 8.87[12] 0.886 πλανήτης γίγαντας πάγου έχει δαχτυλίδια 4/5 1781 Ποσειδώνας 24622±19[12] 3.865 62.540 57.7 102413± ±5[12] 17.147 1.638±0.004[12] 11.15[12] 1.137 πλανήτης γίγαντας πάγου has rings 5/4 1846 Earth 6371.0084±0.0001[12] 1 1,083.21 1 5972.4±0.3[12] 1 5.5136±0.0003[12] 9.80[12] 1 terrestrial planet 6 - Venus 6052±1[12] 0.9499 928.43 0.857 4867.5±0.2[12] 0.815 5.243±0.003[12] 8.87[12] 0.905 terrestrial planet 7 - Mars 3389.5±0.2[12] 0.5320 163.18 0.151 641.71±0.03[12] 0.107 3.9341±0.0007[12] 3.71[12] 0.379 terrestrial planet 8 - GanymedeJupiter III 2634.1±0.3 0.4135 76.30 0.0704 148.2 0.0248 1.936 1.428 0.146 moon of Jupiter (icy) 9/10 1610 TitanSaturn VI 2574.73±0.09[a] 0.4037[a] 71.50 0.0658 134.5 0.0225 1.8798 ± 0.0044 1.354 0.138 moon of Saturn (icy) 10/11 1655 Mercury 2439.4±0.1[12] 0.3829 60.83 0.0562 330.11±0.02[12] 0.0553 5.4291±0.007[12] 3.70[12] 0.377 terrestrial planet 11/9 - CallistoJupiter IV 2410.3±1.5 0.3783 58.65 0.0541 107.6 0.018 1.8344 ± 0.0034 1.23603 0.126 moon of Jupiter (icy) 12 1610 IoJupiter I 1821.6±0.5 0.2859 25.32 0.0234 89.32 0.015 3.528 ± 0.006 1.797 0.183 moon of Jupiter (terrestrial) 13 1610 Moon (Luna)Earth I 1737.5±0.1[13] 0.2727 21.958 0.0203 73.46[14] 0.0123 3.344±0.005[13] 1.625 0.166 moon of Earth (terrestrial) 14 - EuropaJupiter II 1560.8±0.5 0.2450 15.93 0.0147 48.00 0.008035 3.013 ± 0.005 1.316 0.134 moon of Jupiter (terrestrial) 15 1610 TritonNeptune I 1353.4±0.9[a] 0.2124[a] 10.38 0.0096 21.39±0.03 0.003599 2.061 0.782 0.0797 moon of Neptune (icy) 16 1846 Pluto134340 1188.3±0.8 0.187 7.057 0.00651 13.03±0.03 0.0022 1.854 ± 0.006 0.620 0.063 dwarf planet; plutonium; multiple 17/18 1930 Eris136199 1163±6[b][15] 0.1825[b] 6.59 0.006 1 16.6±0.2[16] 0.0028 2.52±0.07 0.824 0.083 dwarf planet SDO; binary 18/17 2003 Titan Sky III 788.4±0.6[c] 0.1237[c] 2.06 0.0019 3.4 0±0.06 0.00059 1.711 ± 0.005 0.378 0.0385 Moon of Heaven 19-20/20/2 0 20 1787 Haumea136108 760±40 (≈ 780 best fit)[17][d] 0.12 1.98[e] 0.100 18 4.01±0.04[18] 0.00066 2.018[17][d] 0.401 0.0409 dwarf audio KBO (7:12); has rings 19-24/19 2004 RheaSaturn V V 0.1199[c] 1.87 0.0017 2.307 0.00039 1.236 ± 0.005 0.26 0.027 Saturn moon 20-22/23 1672 Oberon Urans 761.4± ±<3><5>2.6[a] 0.1195[a] 1.85 0.0017 3.08±0.09 0.0005 1.63 ± 0.05 0.347 0.035 Sky Moon 20-22/21-2 1787 IapetusSaturn VIII 734.5±2.8 0.1153 1.66 0.0015 1.806 0.00033 1.088 ± 0.013 0.223 0.0227 Saturn's moon 222 24/24-25 1671 Makemake136472 715+19-11[19] 0.112 1.53 0.0014 ≈ 3.1 0.00053 1.95 0.57 0.0581 planet?? cubewano 22-24/21-22 2005 Gonggong2225088 615±25[20] 0.0983 1.03 0.0 3.0.0009 1.75±0.07 0.00029 1.72 ± 0.16 0.3 0.0306 dwarf planet?? resonant SDO (3:10) 25-27/24-25 2007 CharonPluto I 606±0.5 0.0951 0.932 0.000 9 1.586±0.015 0.00025 1.702 ± 0.021 0.288 0.0294 Pluto's moon 25-26/? 1978 UmbrielUranos II 584.7±2.8 0.0918 0.837 0.0008 1.28± 0.03 0.00020 1.39 ± 0.16 0.234 0.024 Moon of Heaven 26-27/; 1851 Arieluran A 578.9±0.6 0.0909 0.813 0.0007 1.25± 0.02 0.000226 1.66 ± 0.15 0.269 0.027 Moon of Heaven 28 /? 1851 Dionymni IV 561.4±0.4 0.0881 0.741 0.0007 1.095 0.000183 1.478 ± 0.003 0.232 0.0237 Moon of Saturn 29-30/? 1684 Quaoar50000 560.5±0.6 0.0879 0.737 0.0007 1.4±0.2 0.0002 1.99 ± 0.46[21] 0.3 0.0306 cubewano binary 29-30/; 2002 TethysSaturn III 531.1±0.6 0.0834 0.624 0.0006 0.617 2 0.000103 0.984 ± 0.003[22] 0.145 0.015 Saturn moon 31-32/; 1684 Sedna90377 498±40 0.0785 0.516 0.0005; sednoid; independent object? 2003 Ceres1 469.7±0.1[23] 0.0742 0.433 0.0004 0.938[24] 0.000157 2.17 0.28 0.029 dwarf planet asteroid zone; 1801 Orcus90482 458±13 0,0719 0,404 0,0004 0,61±0,04 0,0001 1,53 ± 0,14 0,2 0,0204 plutino? Binary? 2004 Salacia120347 423±11 0.0664 0.3729 0.0003 0.492±0.007[25] 0.000082 1.5 ± 0.12[25] 0.165 0.0168 cubewano; Binary? 2004 From 200 to 399 km All iconoclastic icy moons with rays greater than 200 km apart from Proteus are clearly round, although those under 400 km that had their shapes carefully measured are not in the hydrostatic balance. [26] The known densities of TNOs in this size range are remarkably low (1-1.2 g/cm<sup>3</sup>), suggesting that objects retain significant internal porosity from their formation and have never been gravitationally compressed into fully solid bodies. [27] Body[note 1] Image radius[note 2](km) Mass(1020 kg) Density(g/cm<sup>3</sup>) Type[note 5] Refs[note 6] · M 2002 MS4307261 390±6 -- cubewano [29] 2002 AW19755565 384±19 -- cube swano [30] Varda174567 373±8 ≈ 2.5 1.27+0.41-0.44 cubewano; binary [31] · [31] 2013 FY27532037 370+45-43 -- independent object; binary [32] 2003 AZ84208996 353±12 - 0.87±0.01 plutino; possible binary [33] DysnomiaEris I 350±58 -- Eris moon [34] 2004 GV990568 340±17 -- cubewano [35] 2005 RN43145452 340+28-37 -- cubewano [35] Varuna20000 334+77-43 ≈ 1.6 0.99 cubewano [36] · [37] 2002 UX2555637 332±15 1.25±0.03 0.82±0.11 binary [38] · [39] VP113 325±175 -- sednoid [40] G!kúnll'hòmdímà229762 321±14 1.361±0.033 1.02±0.17 SDO; binary [41] · [27] 2014 UZ224 318+16-20 -- SDO [42] 2015 RR245523794 ≈ 313 -- KBO resonator (2:9); binary [43] 2008 OG19470599 309.5+28-56.5 - 0.609±0.004 SDO [44] · [44] Ixion28978 308.5±10 -- pluto [45] 2007 JJ43278361 305+85-70 -- cube wano [46] Chaos19521 300+300+300+270-65 -- cubewano [35] 2014 EZ5123692 &gt; 288 -- SDO [47] 2002 XW9378799 283+36-37 -- other TNO [48] 2004 XR190 ≈ 278 -- SDO [7] 2002 XV93 275+11-12 -- pluto [49] 2003 VS284922 274+15-22 -- pluto [50] 2003 UZ413455502 ≈ 268 -- pluto [7] Vesta4 262.7±0.1 2.59 3.46 asteroid zone type V [51] · [51] 2005 RM43145451 262+48-52 -- SDO [52] Pallas2 256±3 2.04±0.03 2.89±0.08 Asteroid Zone Type B [53] 2004 2004 TY364120348 256+19-20 -- cubewano [45] EnceladusSaturn II 252.1±0.2 1.08±0.001 1.609±0.005 Saturn moon [54] · [55] 2002 TC30284522 249.8 -- resonant SDO (2:5) [56] 2005 UQ513202421 249+32-y 38 -- cubewano [30] Miranda Moranos V 235.8±0.7 0.659±0.075 1.2±0.15 Moon of Heaven [57] · [58] Dziewanna471143 235+18-5 -- SDO [59] 2005 TB190145480 232±31 -- independent object [34] 1999 DE9 26375 231±23 -- audio SDO (2:5) [60] 2003 FY 128120132 230±11 -- SDO [34] 2002 VR12884719 224+24-22 -- pluto [49] VanthOrcus I 221.3±5.1 ≈ 0.7 ≈ 1.5 moon 90482 Orcus [61] · [61] Hygiea10 217±7 0.832±0.08 1.944±0.25 Asteroid Zone Type C [62] · [62] 2004 NT33444030 212+44-40 -- cubewano [30] ProteusNepune VIII 210±7 0.44 ≈ 1.3 Neptune moon [5] · [5] 2005 QU182303775 208±37 -- SDO [34] 2002 KX1419951 207.5±0.5 -- cubewano [63] 2001 QF298469372 204+20-22 -- plutino [49] Huya38628 203±8 &gt; 0.5, &gt; 1.43 plutino; binary [38] · [64] 2004 PF115175113 203+49-38 -- pluto [49] Legend: SDO – Scattered Disk Object Cube - Classic Kuiper Pluto Band Object – 2:3 Orbital Echo with Neptune From 100 to 199 km This list contains a selection of objects estimated to be between 100 and 199 km in radius (200 and 399 km in diameter). Most of them may be above the limit for hydrostatic balance, but most are irregular. Most of the trans-Neptunian objects (TNO) listed with a radius of less than 200 kilometers have assumed sizes based on a general albedo of 0.09, since they are too far away to directly measure their sizes with existing instruments. The mass changes from 1021 kg to 1018 kg (Zg). Main zone asteroids have orbital elements limited by (2.0 AU &lt; one &lt; 3.2 AU q &gt; 1.666 AU) according to JPL Solar System Dynamics (JPLSSD). [65] Many TNOs are omitted from this list as their sizes are little known. [28] Body[note 1] Image radius[note 2](km) Mass (1018 kg) Refs [6] · M 2004 2004 199±19.5 ≈ 30 plutino [49] · [66] MimasSaturn I 198.2±0.4 37.49±0.03 Saturn moon [54] · [55] 1998 SN16535671 196.5±19.5 cubewano [30] NereidNeptune II 178.5 ±6.5 KBO echo (4:9) [28] 19 TL6615874 169.5±10 SDO [34] 2004 XA192230965 169.5+60 - 47.5 SDO [49] 2002 WC19119979 ≈ 169 77±5 resonant KBO (1:2); binary [68] Interamnia704 166±3 38±13 asteroid band type F [69] · [69] IlmarëVarda I 163+19-17 moon 174567 Varda [70] Hi'iakaHaumea I ≈ 160 17.9±1.1 moon Haumea [18] · [18] Europa52 152.0±1.8 23.8±5.8 asteroid band type C [71] ; [72] Davida511 145.2±1.1 33.8±10.2 asteroid band type C [73] ; [72] 2002 TX30055636 143±5 cubewano [74] Sylvia87 143±5.5 14.78±0.06 outer asteroid belt type X; trinari [75] · [76] ActaeaSalacia I 143±12 moon 120347 Salacia [77] HyperionSaturn VII 138.6±4 5.62±0.05 Saturn moon [26] · [26] Lempo47171 136+8.5-9.5 plutino; tribarary [78] 1998 SM16526308 134±14 6.87±1.8 KBO sound (1:2) [79] · [79] Euphyrsyne31 134±2 17±3 asteroid band type C; binary [71] · [72] Hariclo10199 ≈ 130 centaur; has rings [80] Eunomia15 128.2±1.5 31.4±1.8 asteroid belt type S [81] ; [72] HiisiLempo II 125.5+8-8.5

Cybele65 118.6±2.1 13.6±3.1 Outer Zone Asteroid Type C [85] · [72] Nunam79360 118+14–15 Secondary 79360 Sila [83] Patientia451 112.9±2.3 10.9±5.3 Asteroid Zone Type C [84] · [72] Ceto65489 111.5±5.4±0.4 Extended Centaur Binary [34] · [86] Herculina532 111.2±2.4 asteroid belt type S [85] Psyche16 111±2 24.1±3.2 asteroid belt type M [87] S/2007 (148780) 1Alitja I 110.5±17–62.5 Secondary 148780 Alitja [30] Bamberga24 110.35±0.72 10:1 Asteroid Zone Type C [84] · [72] Doris48 108.2+2.4 6.1±3.0 Asteroid Zone Type C [84] · [72] Chiron206 60.9±0.95 108±5 centaur; has rings [38] Egeria13 107.6±8.4 2.6±4.2 asteroid belt type G [72] · [72] Iris7 107.2±5.13 8.8±1.3 asteroid belt type S [88] · [88] PhoebeSatur IX 106.6±0.8 29±0.1 Saturn moon [26] · [26] S/2010 (38628) 1Huuya I 106±15 moon of 38628 Huya [38] Camilla107 105±4 11.2±3.0 outer asteroid belt type C; trinari [84] · [72] Fortuna19 103±3 8.6±1.5 asteroid belt type G [72] · [72] Thisbe88 102±5 15.3±3.1 Asteroid Band Type B [72] · [72] Eugenia45 101±1 5.7±0.1 F-zone asteroid; trinari [84] · [89] Legend: centaur – asteroids orbiting between Jupiter outer planets – asteroids located in Jupiter's L4 and L5 Lagrange points From 50 to 99 selection of objects with a radius of 50 and 99 km (100 km to 199 km in average diameter). The objects listed currently include most objects in the asteroid belt and moons of giant planets in this size range, but many newly discovered objects in the outer solar system are missing, such as those included in the following report. [28] Asteroid spectral forms are usually Tholen, but some might be SMASS. BodyNote1 1 Image radius[note 2](km) Mass (1018 kg) Type – Refs notes[6]r · M: Biernoj54598 99±3–3.5 centaur [90] Themis24 98±2 5.9±1.9 asteroid zone c [84] · [72] LarissaLeptone VII 97.0±5.4 ±4.2 moon of Neptune [91] · [1] Ursula75 96.8±1.3 8.4±5.3 asteroid band type C [81] · [72] Amphrite94 98.4±0.6 13±2[questionable - discussion] asteroid belt type S [84] · [72] Daphne41 94.5±0.5 6.3±0.1 asteroid band type C; binary [93] · [72] Aurora94 93.8±3.6[questionable - discussion] 6.2±3.6 asteroid band type C [73] · [72] Hermione121 94.93±5.0±0.3 outer asteroid belt type C; binary [94] · [72] Bertha154 93.4±0.9 9.9±2.5[questionable - discussion] asteroid band type C [72] · [72] Hebe9 92.6±1.4 14±1[questionable - discussion] type of asteroid band S [72] · [72] Metis9 92.8±4.1±7 asteroid band type S [84] · [72] Elektra130 90.3±1.3 6.6±0.4 asteroid band type G; trinari [84] · [95] JanusSaturn X 89.5±1.4 1.898±0.001 Saturn moon [26] · [26] Techaronhiawako88611 89+16–18 2.44±0.03[questionable - discussion] cubewano? binary [30] · [96] Aegle96 88.9±0.8 6.4±6.3 T Band Asteroid Type [84] · [72] S/2015 (136472) 1Makemake I ±87.5 Moon of Makemake [97] GalateaNeptune VI 87.4±4.9 2.1±2.0±0.8 Neptune Moon [91] · [98] PhorcyshCeto I 87+8–9 ±1.67 Secondary 65489 Ceto [86] · [86] Palma372 86.8±1.4[questionable - 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