The Solar System, to scale, for a school yard

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On the highest-resolution printer you can, print pages, twice. (On low-resolution printers some moons disappear.)
Print pages at 100% (some printer drivers default to 96%). Do not print duplex.

Affix pages to cards; string together pairs of cards such that they can be draped over the back of a chair.

Put Sun cards over a chair in corner of playground, and 'planet'-chairs at correct distance from the Sun.

Sun-Saturn distance set to be 120 metres, which determines the scaling of 11,950,000,000 to 1.
At 1200 dots per inch, one printer pixel is about 253 km.
At this scale, the nearest star, Proxima Centauri, would be about 3,360 km away.
At this scale, the nearest major galaxy, Andromeda, would be about 13.4 A.U. away.

Sun-asteroid distance proxied by Sun-Ceres.
All asteroid-asteroid distances are huge and vary as they orbit.
So obviously portrayed asteroid-asteroid distances are nonsensically not to scale.
(But everything else to scale: planet sizes; moon sizes; planet-moon distances; sun-planet distances.)

Links:

Author, Julian D. A. Wiseman	**http://www.jdawiseman.com/author.html**
English	**http://www.jdawiseman.com/papers/schools/solar_system_to_scale.html** **http://www.jdawiseman.com/papers/schools/solar_system_to_scale_A4.pdf** **http://www.jdawiseman.com/papers/schools/solar_system_to_scale_USL.pdf**
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For changing of scale and of language	**http://www.jdawiseman.com/papers/schools/solar_system_to_scale.ps**

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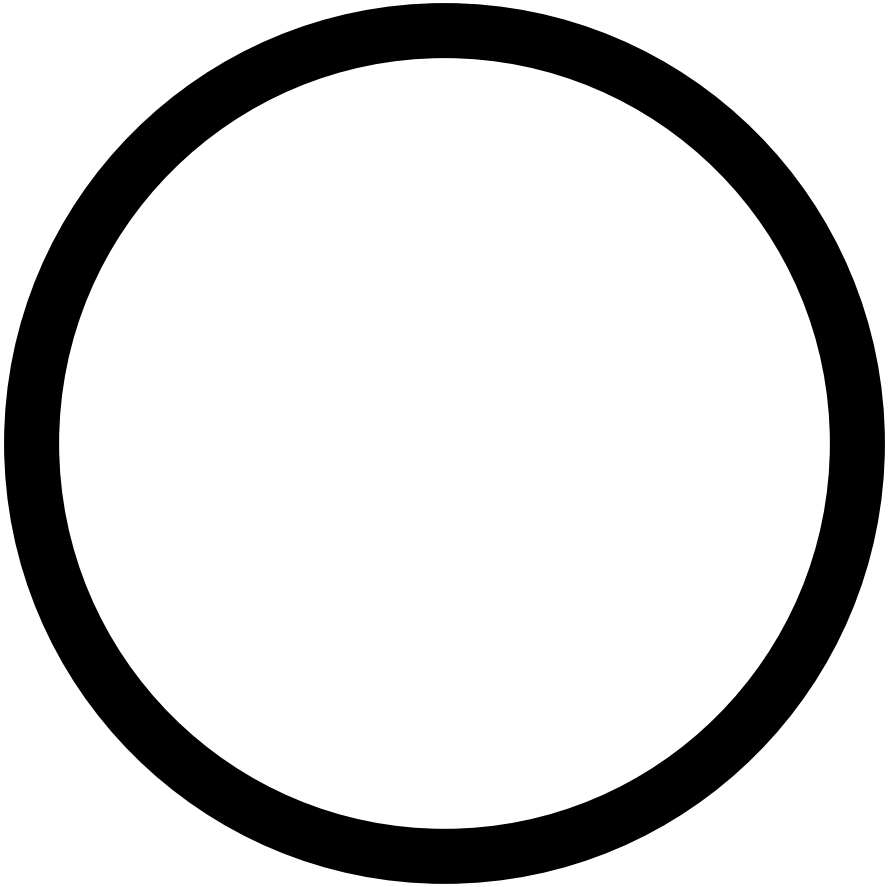

The Sun

The equatorial diameter of the Sun is about 1,391,400 km.

Mercury

To sun, average: 58,000,000 km

Scaled: 4.86 metres

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Venus

To sun, average: 108,000,000 km

Scaled: 9.04 metres

Earth

To sun, average: 149,600,000 km

Scaled: 12.5 metres

At this scale the moon is ≈32 mm from the earth, and that is the furthest humans have travelled.

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Mars

To sun, average: 228,000,000 km

Scaled: 19.1 metres

Asteroids

To sun, average: 413,900,000 km

Scaled: 34.6 metres

As Ceres is largest asteroid, and about 31% of mass of all asteroids, uses average Sun-Ceres distance.
Obviously asteroid-asteroid distances huge and hugely variable, so portrayed gaps are nonsense.

Jupiter

To sun, average: 778,500,000 km

Scaled: 65.2 metres

Saturn

To sun, average: 1,433,000,000 km

Scaled: 120 metres

Rings shown to size of A and B rings. Stripes are schematic not actual.

Uranus

To sun, average: 2,938,000,000 km

Scaled: 246 metres

Neptune

To sun, average: 4,499,000,000 km

Scaled: 377 metres

Pluto

To sun, average: 5,907,000,000 km

Scaled: 495 metres

Dwarf planet. Distance is average of aphelion (49.319 AU) and perihelion (29.656 AU).

Eris

To sun: 14,410,000,000 km

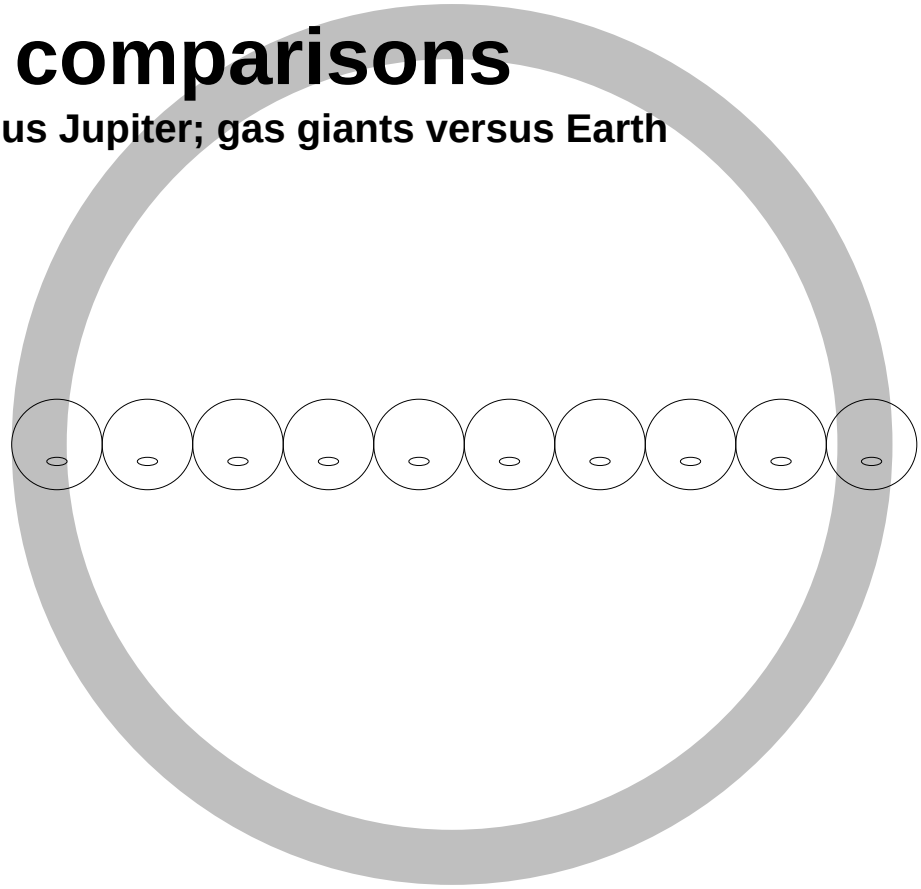
Scaled: 1,206 metres

Dwarf planet. Distance as of May 2016.

Size comparisons

Sun versus Jupiter; gas giants versus Earth

The Sun



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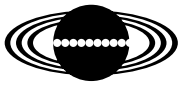

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