

Solar System Scale Model Demonstration

Ratio of this scale model to actual sizes: (~560 million : 1)

<u>Solar System Object</u>	<u>Representative Sphere</u>	<u>Diameter (centimeters)</u>	<u>Diameter (inches)</u>	<u>Actual Diameter (km) (Equatorial)</u>	<u>Actual Distance from Sun (km) (Semimajor Axis)</u>	<u>Scale Model Distance from Sun</u>
Mercury	Steel Shot (Silver Ball)	0.8 cm	0.31 in	4,878 km	57.9×10^6 km	100 meters
Venus	Big Marble (Clear)	2.2 cm	0.85 in	12,104 km	108.2×10^6 km	193 meters
Earth	Big Marble (Dark)	2.3 cm	0.9 in	12,756 km	149.6×10^6 km	267 meters (~3 football fields)
Moon	Airsoft BB (Yellow Plastic)	0.6 cm	0.24 in	3,476 km	0.384×10^6 km (from Earth)	60 centimeters (from Earth)
Mars	Small Marble (White Swirl)	1.3 cm	0.5 in	6,792 km	227.9×10^6 km	407 meters
Jupiter	Basketball	25 cm	9.55 in	142,988 km	778.3×10^6 km	1.39 kilometers
Saturn	Volleyball	21 cm	8.25 in	120,660 km	$1,427.0 \times 10^6$ km	2.55 kilometers
Uranus	Softball (Large Yellow)	9.5 cm	3.75 in	51,118 km	$2,869.0 \times 10^6$ km	5.12 kilometers
Neptune	Softball (Small White)	9 cm	3.5 in	49,500 km	$4,497.1 \times 10^6$ km	8.03 kilometers (about 5 miles)
Pluto	Brass BB (Smallest BB)	0.45 cm	0.18 in	2,370 km	$5,900 \times 10^6$ km	10.53 kilometers
Sun	<i>Would be an 8 ft diameter ball</i>	245 cm	96.5 in (~8 ft)	1,377,648 km	4.04×10^{13} km (to nearest star)	71,137 km (to nearest star, roughly twice as far as the moon)

Other interesting distances and speeds at this scale...

Light

<u>Quantity</u>	<u>Scaled (English)</u>	<u>Scaled (Metric)</u>	<u>Actual Speed</u>
Speed of Light	21 in/sec	53 cm/sec	3×10^8 m/sec
Light Year	10,352 mi	16,660 km	9.46×10^{12} km

Distances to Stars and Center of Milky Way

<u>Object</u>	<u>Scaled Distance (English)</u>	<u>Scaled Distance (Metric)</u>	<u>Actual Distance</u>
To Alpha Centauri (nearest star)	44,202 mi	71,137 km	4.04×10^{13} km
To Sirius (brightest star in night sky)	89,440 mi	143,940 km	8.17×10^{13} km
To Deneb (one of the most luminous stars known)	14,513,278 mi	23,356,857 km	1.33×10^{16} km
To Center of Milky Way	286,850,511 mi	461,641,149 km	42.62×10^{17} km

Sizes of Stars (diameters)

<u>Type of Star</u>	<u>Scaled Size (English)</u>	<u>Scaled Size (Metric)</u>	<u>Actual Size</u>
Hot Star (Type O5)	144.74 ft	44.1 m	25,054,200 km
Cool Star (Type M5)	30.88 in	78.42 cm	445,408 km
Red Giant (Betelgeuse)	6031 ft	1838 m	1,043,925,000 km
White Dwarf (Sirius B)	0.82 in (close to Earth's size)	2.1 cm	11,700 km
Neutron Star	0.0014 in	0.035 mm	20 km