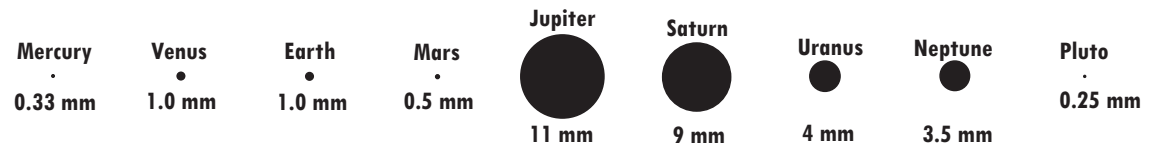
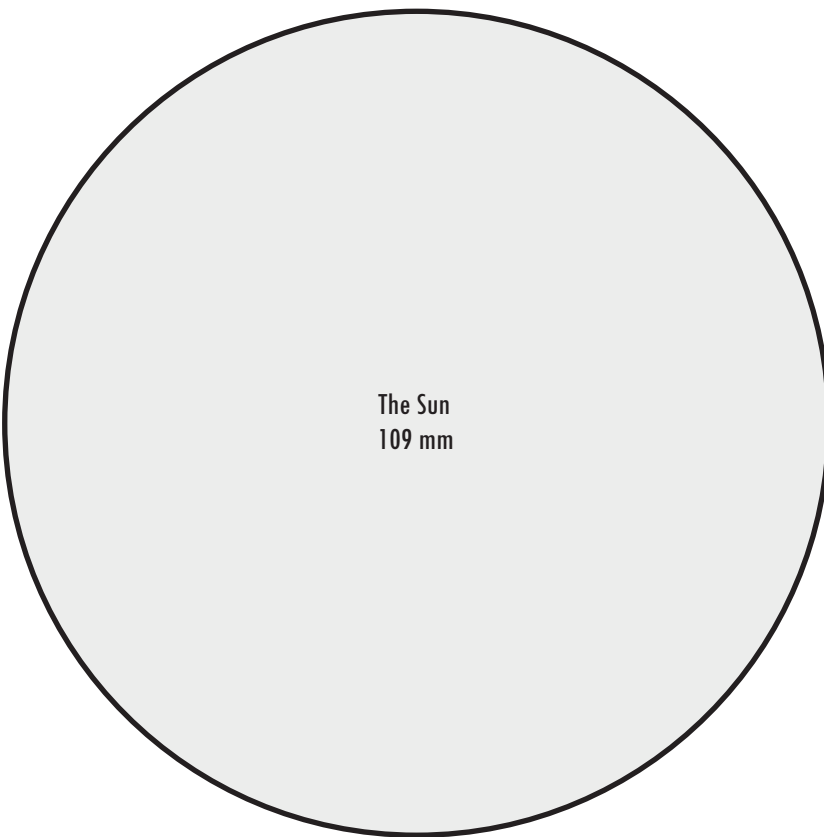


The Gigantic Stage

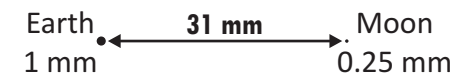
The table at right shows what we would see if scaled the solar system so that the earth was 1 mm in diameter.

Object	Scale Diameter	Scale Distance from Sun
Sun	109 mm	-
Mercury	0.33 mm	5 metres
Venus	1 mm	8.5 metres
Earth	1 mm	12 metres
Mars	0.5 mm	18 metres
Jupiter	11 mm	62 metres
Saturn	9 mm	114 metres
Uranus	4 mm	230 metres
Neptune	3.9 mm	360 metres
Pluto	0.25	480 metres
Proxima centauri	120 mm	3200 kilometres
Sirius	20 mm	6500 kilometres



Diameters drawn exactly to scale

If we used this same scale, the moon would be the same size as Pluto - 0.25 mm. Its orbit would be 31 mm from earth.



The twin stars of Alpha Centauri are 1.1 and 1.2 X the size of the sun

The Gigantic Stage - Walk through the solar system

In this exercise, we scale the earth from its real diameter of 12,742 km down to 1 mm. We then use that same scale for the sun and other planets in our solar system. For comparison we add 2 extras Proxima centauri, the closest star, and Sirius, the brightest star. You can see the result on the reverse of this page.

A walk across our solar system has been plotted using this information. Go for that walk and try to visualize the distances that are involved in the real world.

Further Excursions

1. It is very difficult to see the small planets of Mercury, Venus, Earth and Mars on the scale that is shown. How could you change the scale to make these planets more easily seen, say twice the size?
2. The moon is 384,400 kilometres from Earth. It took the spacecraft Apollo 11, 4.28 days to reach the moon in 1969. What speed (km/day) was it traveling at to make this trip? Round this figure to the nearest thousand.
If we had that spacecraft, how long would it take to reach Mars (225 million km distant) from Earth?
3. It takes light 8.3 minutes to reach Earth from the Sun, even though light travels at 300,000 kilometres per second. We call this distance 8.3 light minutes.
 - a. How many light minutes is Jupiter from the Sun?
 - b. How many light minutes is Pluto from the sun ?
 - c. Now use the scale to work out how far away in light years our nearest solar neighbour Proxima Centauri is?
4. Use the information from Questions 2 and 3 above to estimate the following
 - a. How long would it take a spacecraft like Apollo 11 to reach Pluto?
 - b. How long would it take a spacecraft to reach Proxima Centauri
5. We would not survive on Venus, and in fact many craft have already been sacrificed to this awful planet, so where-else might we travel to in the Solar System?
 - a. Mercury. Why/Why not?
 - b. Jupiter. Why/Why not?
 - c. Others. Why/Why not?
6. Do you think that humans will ever visit other planets? Explain.
7. There are hundreds of thousands of suns, similar to ours in our galaxy, The Milky Way.
If there was a planet exactly like earth, with the same tilt and distance from one of those suns, do you think that we will ever be able to communicate with them? Explain
8. Would you expect human-like life-forms on other planets in our Solar System? Explain
9. Some people remember the planets by using this mnemonic.

MY VERY ENERGETIC MONKEY JUST SHOWED US NINE PLANETS

MERCURY, VENUS, EARTH, MARS, JUPITER, SATURN, URANUS, NEPTUNE, PLUTO

Ps We know that Pluto is no longer a planet!