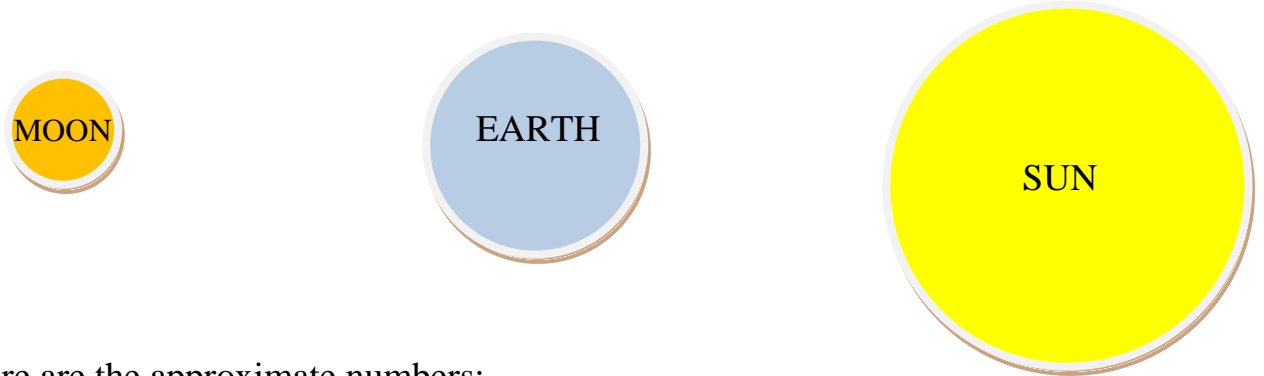


AN ABSOLUTELY FABULOUS LESSON TO TEACH!!!!

The RELATIVE SIZES and POSITIONS of EARTH, MOON and SUN.

Most people have no idea of the actual size of the numbers involved.

Ask people to draw a SCALE MODEL and they will probably draw something like this:



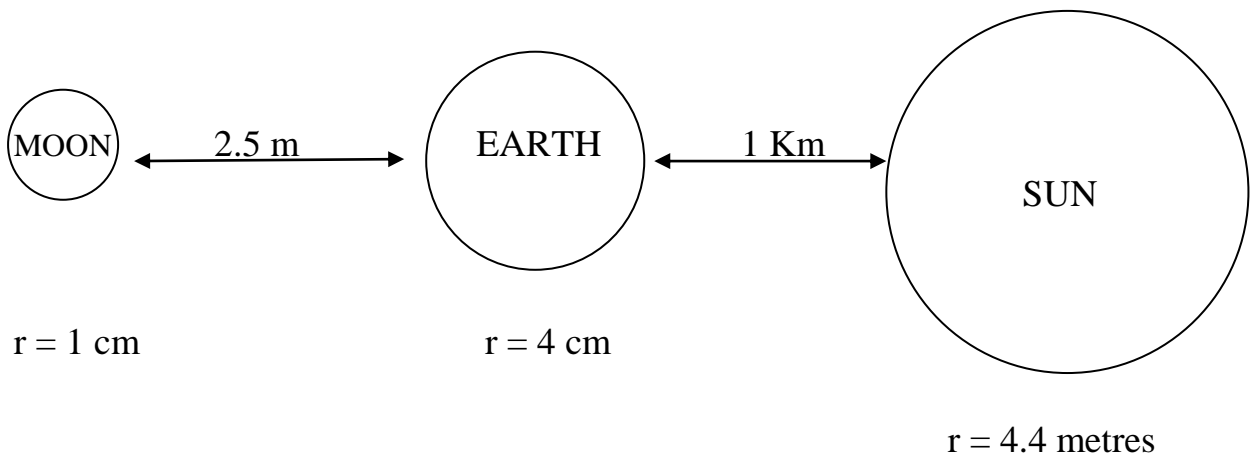
Here are the approximate numbers:

Radius of Moon	1 600 km	Moon to Earth	400 000 km
Radius of Earth	6 400 km	Earth to Sun	150 000 000 km
Radius of Sun	700 000 km		

Because these numbers are very large, most people do not have the skills to compare them unless we bring them down to scale.

Suppose we let 1 cm = 1600 km

Radius of Moon	1 cm	Moon to Earth	250 cm = 2.5 m
Radius of Earth	4 cm	Earth to Sun	93750cm ≈ 1 Km!
Radius of Sun	437.5 cm ≈ 4.4 m		

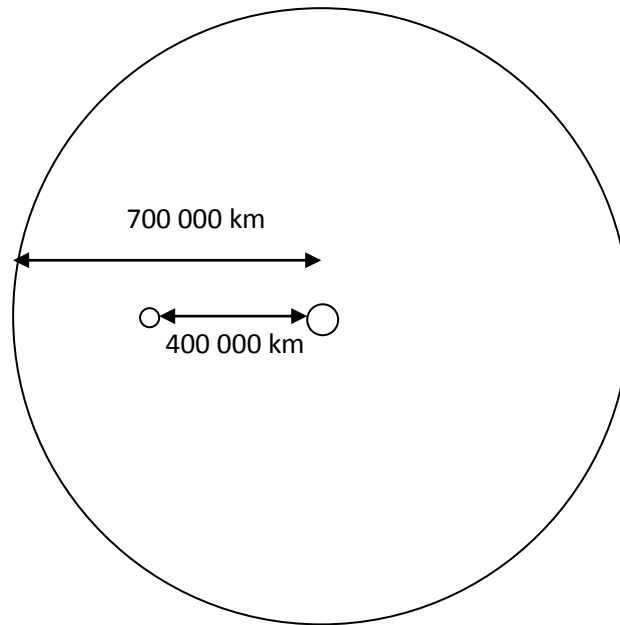


We could fit the 1 cm radius Moon at one end of the white board and the 4 cm radius Earth 2.5 metres away BUT the Sun would be a massive circle 8.8 metres high and a distance of nearly 1 Km away!

Notice that the DISTANCE from the Moon to Earth is less than the RADIUS of the Sun!

Imagining the Earth to be at the centre of the Sun, then the Moon would not even be at the surface of the Sun!

eg



Clearly, it is not possible to make a proper scale model of Moon, Earth and Sun with their correct sizes and distances apart.

The VOLUME of a sphere is $\frac{4\pi r^3}{3}$

The volume of the sun is therefore $\frac{4\pi(700\,000)^3}{3} \approx 1.436755 \times 10^{18} \text{ Km}^3$

The volume of the Earth is therefore $\frac{4\pi(6\,400)^3}{3} \approx 1.098066 \times 10^{12} \text{ Km}^3$

So to find the number of Earths that would fit into the Sun we simply divide these numbers and obtain : 1 308 441

In words, a staggering one and a third million Earths would fit inside the Sun.