

Recreate the Solar System - Step by Step

name: _____

The distances between planets in our solar system are so great that they're hard to imagine. Create your own solar system using the following objects, and get a sense of the distance and scale of our immense solar system. Remember that our solar system is just one tiny part in the Milky Way Galaxy.

Materials: 10 stones:

- 1 very big rock (about the size of a big grapefruit) (Jupiter)
- 1 big rock (about the size of a large orange) (Saturn)
- 2 small rocks (about the size of very large grape) (Neptune & Uranus)
- 2 small stone (about the size of large M&M) (Venus & Earth)
- 1 small pebble (about the size of a small raisin) (Mars)
- 3 tiny pebbles (just a flake of a pebble or rock) (Mercury, the Moon, Pluto)

11 small pieces paper. Label each piece of paper with one of the following features of our solar system:

Sun	Mercury	Venus	Earth	Moon	Mars
Jupiter	Saturn	Uranus	Neptune	Pluto	

- Procedures:**
- 1) Start your solar system by placing the paper with SUN written on it on the ground.
 - 2) Place your heel next to the Sun paper. Halfway along your foot/shoe, place a tiny pebble. Mark the spot with a piece of paper titled MERCURY.
 - 3) Keep your foot in the same spot. At the joint in your big toe, place a small stone. Mark the spot with a piece of paper titled VENUS.
 - 4) At the tip of your toe, place the other small stone. Place the paper titled EARTH by it. Next to the Earth stone, place a tiny pebble. This is our MOON; mark it with a small piece of paper.
 - 5) Now place the heel of one foot just ahead of the toes of the other. Halfway along your second shoe/foot, place the small pebble with the paper titled MARS. You should be one and a half (1 and $\frac{1}{2}$) feet/shoes from the Sun.
 - 6) Move forward 3 more shoes/feet (heel to toe every time). You should be 5 shoes/feet from the Sun. Place the very big rock at the tip of your foot with the paper titled JUPITER.
 - 7) Walk forward 5 more shoes/feet (keep going heel to toe every time). You should be 10 steps away from the Sun. Halfway along your last shoe/foot, place the big rock and the paper titled SATURN.

Procedures (continued):

- 8) Walk 9 more shoe lengths (19 shoe lengths from the Sun). Place a small rock and the paper titled URANUS.
- 9) Walk 11 more shoe lengths (30 shoe lengths from the Sun)! Place the other small rock and the paper titled NEPTUNE.
- 10) Finally, 10 more shoe lengths (40 shoe lengths from the Sun)!!! Place the last tiny pebble with the last paper titled PLUTO.

Observations:

1) Look how spread out the planets are!

The Inner planets (Mercury, Venus, Earth, and Mars) are bunched up, and the giant gaseous outer planets are spread out. After Saturn, the planets really spread out. What is beyond Pluto?

2) Check out the differences in size.

Jupiter and Saturn are much bigger than the other planets. Mercury and Pluto (and to some extent Mars) are tiny compared to the others.

3) What about the Sun?

The Sun is roughly 10 times wider than Jupiter. In this model, the Sun would be a little bit bigger than the large Omnikin balls that we use in gym (about a metre wide). I doubt you could find and carry a rock that large for our Solar System model.

4) We are just one small, minuscule part of a bigger picture.

Our Solar System is just a small part of our Milky Way Galaxy. Astronomers have found over 500 solar systems in our neighbourhood of the Milky Way, and are discovering more every year with the help of the space telescopes like the Hubble Telescope and the Kepler Telescope.

Given the immense size of the Milky Way, scientists estimate that there could be tens of billions of solar systems in our Milky Way Galaxy. And that's just looking at our own galaxy. What about galaxies far, far away? We don't know, but the number of solar systems OUT THERE is going to BIG!

**We are living on one tiny speck of sand
on a beach that spreads out as far as you can see...**

or perhaps,

...all we are is dust in the wind!