

Activity for Size and Distance in our Solar System

Materials:

- Sun – a balloon that can be blown up to an 8-inch diameter
- Mercury – a pinhead, diameter .03 inch sprinkle*
- Venus – a peppercorn, diameter .08 inch
- Earth – a second peppercorn
- Mars – a second sprinkle*
- Jupiter – a pecan, walnut, or chestnut of .9 inch diameter
- Saturn – a filbert or acorn, diameter of .7 inch
- Uranus – a peanut or coffee bean, diameter .3 inch
- Neptune – a second peanut or coffee bean
- Pluto – a third sprinkle*
- Lithographs of each planet

*Colored candy ball used to decorate cakes and cookies

Directions:

- Put all the objects out on a table.
- See if the students can tell which object represents which planet.
- Have them try to arrange them in the correct order. (The amount of help the students might need depends on when you do this activity and how much they know about the planets.)
- Remind them there are nine planets. The first astonishment is the contrast between the great round looming Sun and the tiny planets.
- Ask the students:
 - How much space do you think we need to take these objects and build a scale model of the solar system?
- Tell the students:

That one of the peppercorns is the Earth we live on.
The Earth is 8,000 miles wide. The peppercorn is .08 of an inch wide.
The Sun is 800 thousand miles wide. The ball representing it is 8 inches wide.
So in reality, one inch in the model represents a hundred thousand miles.
This means that 1 yard (36 inches) represents 3,600,000 miles.
- Take a giant step.
- Tell the students that on our scale model, this distance, once pace across the floor, is an enormous space journey of about three million six hundred thousand miles.
- Ask the students:
- “What is the distance between the Earth and the Sun?”

It is 93 million miles. In our model that is 26 yards, giant steps or paces.
This still may not mean much until someone starts to measure off 26 paces and hits a wall. It is clear you will have to go outside.
- You will have found a place in advance from which you can walk a thousand yards in somewhat of a straight line.

- Hand the Sun and the planets to members of the class with the laminated pictures. Be sure they know the planet they are carrying and can produce it when called.
- Put the Sun down and march away as follows. Appoint someone else to be your “Spacecraft” or “Pacecraft” – so that you are free to talk.
 - Take 10 paces. Call for Mercury and have the Mercury bearer put down his/her card and planet (sprinkle). It may be necessary to weigh it down.
 - Another 9 paces. Venus put down a peppercorn.
 - Another 7 paces. Earth.
- Already the Solar System seems beyond belief. Mercury is supposed to be so close to the Sun that it is merely a scorched rock. As for the Earth, who can believe that the Sun could warm us if we are that far from it?
 - Another 14 paces. Mars. Now come the gasps, at the first substantially larger leap.
 - Another 95 paces to Jupiter.
Here is the “giant planet” a mere nut and more than a city block from its nearest neighbor in space. From now on, amazement itself cannot keep pace, as the intervals grow extravagantly:
 - Another 112 paces. Saturn.
 - Another 249 paces. Uranus.
 - Another 281 paces. Neptune
 - Another 242 paces. Pluto.
- You are marched more than one half mile. Time to observe size and distance of planets.