

Sun, Earth and the Moon

Astronomical play for young children



You will need:

- These instructions
- Pictures, models or postcards showing the Earth, the Sun and the Moon
- A large circle, preferably marked in 12 “slices”

Goal:

Children use their own bodies to get a feeling of how things move. How the Moon orbits the Earth and how the Earth orbits the Sun. The activity can be adjusted, depending on interest and maturity.

Background:

The Solar System was formed from a rotating disk of gas and dust. Gravity ensured that the majority of the material fell towards the center and formed the Sun. But smaller clumps also formed and grew in the disk. These eventually became the planets and the moons. Because of how the Solar System was formed, we observe both planets and moons orbiting counter clockwise.

Setup:

The group of children gather around beyond the marked circle on the floor. They are now distant stars and they can use their hands to “blink”.

If you need the group to focus, consider having them sing “Twinkle, twinkle little star”

Talk about what we are about to do: Learn about how planets move in space.

The Game:

1. EARTH ORBITS THE SUN

One child gets to stand in the middle of the circle and be the Sun. Another child stands on the circle and is the earth. Ask the Earth to orbit the Sun (walk along the circle counter clockwise).

Point out the markings along the circle and talk about how far the Earth moves in one month. Count together how many months there are in a year. Talk about what the months are called and show how the Earth is on the same position in its orbit during a given month. If you have marked the months on the floor then the star-children can stand by their “birthday” as the Earth orbits the Sun.

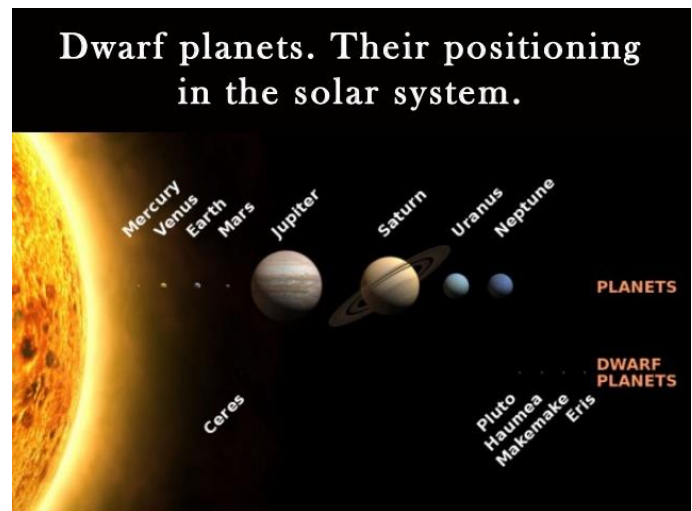
Ask the child playing the Earth to rotate AND orbit the Sun. This can be tricky, but it gives you an opportunity to talk about night and day on the Earth.

This first part ends by thanking children playing the Sun and the Earth and they get to join the circle and be stars again.

2. THE PLANETS

Pick a new child to be the Sun and then ask the children who would like to be a planet. Assign a planet to everyone who wants to participate. If you have a large group, then compliment with dwarf planets.

Ask the planets to orbit the Sun. Let them figure out that some planets are closer to the Sun than the Earth is and some are further away: Mercury, Venus, Earth, Mars, Ceres, Jupiter, Saturn, Uranus, Neptune, Pluto, Haumea, Makemake, Eris).



This section ends with everyone going back to being stars outside the circle.

3. THE MOON ORBITS THE SUN

Select a new child to be the Sun and another to be the Earth and another to be the Moon. The Moon stands besides the Earth. Now ask the Earth to slowly orbit the Sun and the Moon has to try to orbit the Earth simultaneously. Preferably one circle per month, 12 circles per orbit.

Extra points if the Moon always keeps their face towards the Earth, to demonstrate the Moon always points the same side towards the Earth.

4. THE EARTH IS LEANING – SEASONS

This time we need three children for the exercise: A Sun, an Earth, and Polaris. This time the Earth will try to lean towards Polaris as it orbits the Sun. Here you can discuss the seasons, both in the north and in the south.

Thank the children and send them back beyond the circle.

5. TOTAL CHAOS

We continue with the leaning Earth orbiting the Sun, but the children that were stars now become asteroids and start orbiting the Sun. What happens.

Asteroids are everywhere in the Solar System. Talk about distances between the planets and the risk that the Earth may be hit by an Asteroid. Also talk about meteors and shooting stars.