

## Rotation and Revolution

**Subject:** Science

**Grade Level:** 2<sup>nd</sup>-3<sup>rd</sup>

**Rational or Purpose:**

Students are able to see our solar system from materials gathered with a little fun. The students will make a model of the solar system with them being as planets and will demonstrate how the planets orbit the sun and rotate on an axis.

**Materials needed:** (For the class)

- Nine balloons of different colors.
- One big yellow ball or anything else creative to be the sun. (Students could make something to represent the sun.)
- String
- Chalk
- Time to be in a Gymnasium or outside for space.

**Lesson Duration:** 1 hour

**Source:**

["Bring the Solar System to Life," The Educator's Reference Desk](#)

**TEKS:**

2<sup>nd</sup>: 2(d), 2(e), 2(f), 7(a)

3<sup>rd</sup>: 2(c), 2(d), 11(c)

**Background Information:**

Everyday we see the sun rise and set. We also see the moon almost every night. These are examples of how we know we are rotating. Understanding Earth's rotation can be a difficult concept for children, just as it was hard for scientist to believe Galileo when he discovered that Earth revolves around the Sun. This activity gives a visualization of how the Earth revolves around the Sun. One of Earth's revolutions around the Sun takes about three hundred and sixty five days. One full rotation of the Earth is equal to approximately twenty-four hours. We base our time scale on Earth's rotation. The model below can be as close to scale as you choose. The purpose is for the students to see how the Earth rotates and why.

**Activity:**

Students will be able to define rotation, revolution, and orbit. They will describe what an orbit is, and explain how the Earth orbits around the sun. From these examples, they will visualize what our solar system looks like.



**Procedure:**

Today we are going to be the solar system. We know that our solar system is very big, so we need to go to the gymnasium in order to have a lot of space for us to make our solar system.

1. Ask the students to go to the designated place where the solar system is going to be made.
2. Give the 9 students a balloon to blow up. Tell them that this is what we are using to model the planets.
3. Ask one student to hold the yellow ball and stand in the middle of the floor. Ask the kids what the yellow ball represents?
4. Have the class direct the students holding a balloon and ask the class where should the first planet go?
5. Space the students according to the amount of room you have to work with. If you want the system to scale, use actual distances scaled down to millimeters from the sun and space students from there. The first planets will be pretty close, but you can exaggerate if needed.
6. Ask the student representing the sun to hold one end of a piece of string and a student representing a planet to hold the other end and move around the sun in an orbit. Ask another student to take a piece of chalk and go with the student holding the string and to draw in the orbit around the sun.
7. Discuss with the students what is he drawing and why is he drawing it. What planet follows this orbit? Why does a planet follow an orbit?
8. Make an orbit for each planet for the students to follow.
9. Finally, ask the students with the planets to move in their orbits. Remind them that a planet never leaves their orbit, so nobody should bump into each other.
10. Stop the class once Mercury completes one full revolution. Discuss what has happened so far in the solar system.
11. Define revolution with the class. Have students with planets resume their orbits and tell them to keep track of how many revolutions they take. Ask other students to write down observations.

12. Stop when Earth completes one full revolution. Discuss what has happened and have students write out their observations. Remind the class that it takes one year for Earth to revolve around the sun.
13. Keep doing this every now and then till the last planet, Neptune, has completed one full revolution. Ask the students why it takes Neptune so long to complete one full revolution?
14. Tell the students that the planets not only revolve around the sun, but they also rotate.
15. Ask one student with a planet to spin around once. Each planet rotates as it revolves around the sun. It takes the Earth one day to rotate on its axis. Remind them it takes less time to rotate around the planets axis rather than revolving around the sun.
16. Carefully let the students rotate and revolve around the sun in their orbits.