

Grade 3: Solar System

Lesson 2: Solar System Rotation and Revolution

Lesson Objective:

- To create a working model of the solar system.

Learning Objective:

- The students will develop an understanding that all planets rotate on an axis and revolve around the sun within their own orbits.

Time: Two 45 minute periods

Materials:

- Video of solar system
- Large teacher made diagram of solar system (bird's eye view)
- Teacher made planet information cards (picture of planet, planet name, order from the sun, actual and scaled-down distance from the sun, planets before and after it, amount of time of one rotation)
- Four planet markers for each planet (picture and name of planet)
- Tape measures
- String
- Scissors

Vocabulary:

- Rotation
- Revolution
- Motion
- Orbit

Procedure:

- Introduction- Students will view an introductory video that demonstrates planet rotation and revolution.
- After viewing the video the teacher will pose the question, "How can you demonstrate the motions in the solar system?"
- The students will be divided into four cooperative learning groups and be instructed to use anything within the classroom to aid their demonstration.
- They will be allowed approximately five to seven minutes to complete the task. Then each group will present their demonstration.
- Following the demonstrations the teacher will explain that the entire class will cooperatively recreate a model of the solar system's motions by participating in a model using themselves as the sun and the planets. The teacher will use a diagram that will explain what the students will be doing during the activity.

Activity:

- Teacher will assign individual or small groups of students to be a specific planet, or the sun within the solar system.
- Each group or student will be given a ball of string, four planet marker cards, and a planet information card that tells them the length of string they should cut which will replicate their planet's orbit. (The teacher will have pre-determined these lengths in a reasonable scale). The planet information card will also include the distance each planet is from the sun.
- Teacher will bring the class to a large, open area such as a field or gymnasium. Students will take with them their orbit strings, tape measures, and their planet information card.
- The students representing the sun will be positioned in a pre-determined spot.
- The students representing the planets will use the tape measures to determine how far away from the sun they should stand. Students will do this step four times in four opposite

directions (north, east, south, and west). Students will use their planet markers to show where they should place their orbit strings.

- Students will place their strings around the sun using their markers to create their orbits.
- Upon completion of all strings being put into place, each student group will choose one member to stand on their orbit strings in a straight line away from the sun. Students who are not participating will stand outside the solar system and observe the planets' rotations and revolutions.
- The teacher will demonstrate the speed at which all planets should rotate and revolve around the sun using one student as an example.
- The teacher will give a signal for all planets to begin their orbit around the sun using the same motions as their planet would.
- If time allows, students can take turns representing their planet.

Assessment:

- Students will be asked to explain the difference between rotation and revolution of the planets. Students should write their explanations in their science journals using words, pictures, and/or diagrams.

Resources:

- <http://pds.jpl.nasa.gov/planets/welcome.htm>- vivid images of each planet
- <http://usenet.net.nz/nineplanets/overview.html>- basics of the planets rotations as well as a description of each planet and its orbit
- CEEO Curriculum Website - <http://www.ceeo.tufts.edu/roboLABatceeo/>