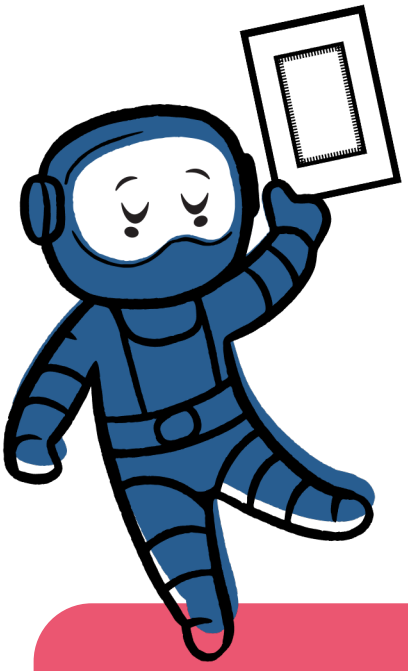
Open-Sky School

Category
SCIENCE



Activity

The Solar System

Activity Summary

This activity aims to introduce students to the notion of proportion and to recognize specific characteristics of the planets in the solar system: their size and position in relation to each other and to the Sun.

MATERIALS

VIDEOS:

- The solar system's formation https://youtu.be/RT4OO0TFLHw?si=gjMdxJBHROt3PwXa
- Solar system 101 https://www.youtube.com/watch?v=libKVRa01L8
- Solar system size and distance https://www.youtube.com/watch?v=DMZ5WFRbSTc&t=74s

- Photocopies of the *Solar System* handout (p. 3)
- Pencil and paper on which to write names of planets
- Cardboard or paper to make a reproduction of the solar system

DURATION

30-60 MINUTES

Preparation

- Watch and choose one or both of the introductory solar system videos *(The solar system's formation* and *Solar System 101)* to show to students, depending on their familiarity on the topic.
- Watch the *Solar System size and distance* video, which provides an overview of the scale size and distance of planets in the solar system.
- Access WikiHow's *How to draw the solar system* article and share it with students: https://www.wikihow.com/Draw-the-Solar-System
- Access the *Scale Model of Solar System* resource: https://www.discovertheuniverse.ca/scale-model
    - Choose your preferred object in *Step 1* to represent the Sun.
    - Gather suggested materials for the planets to reproduce the solar system - dead leaves, grass, rocks, pebbles, etc.
- Form eight teams.
- Write the names of the eight planets on small pieces of paper (to be distributed to teams later).
- Introduce the activity to students. Say: *This activity takes place in two parts. During the first part, you will learn about the planets in the solar system. During the second part, which takes place outside, you will reproduce the solar system using a concept called proportion.*

Steps

Making a solar system on paper

A.

- Watch the **Solar System's Formation** video and/or **Solar System 101** video with your students.
- Distribute copies of the **Planets** handout (see p. 3).
- Provide access to the webpage: **How to draw the solar system.**
- Ask students to make a reproduction of the solar system on cardboard or a large sheet of paper, cutting out the planets or drawing them.
- Check that students arrange the planets in the correct order and name them correctly.

B.

Are the planets all the same size?

- Watch the following video with students: **Solar System Size and Distance.** This video illustrates the large differences in dimensions between the planets of the solar system.
- Discuss with students the meaning of the word *proportion*. According to Merriam-Webster, a proportion is "the relation of one part to another or to the whole with respect to magnitude, quantity, or degree."
- Using the **Scale Model of Solar System** resource and the materials you previously prepared, demonstrate the size of each planet in proportion to the Sun.

Tell students: *This is the challenge in which we will participate outside. You will be split into teams, and together, you will replicate the solar system using natural materials available at the park. Each team will be responsible for reproducing a planet in the solar system as proportional as possible to the others, in size and position.*

- If necessary, review the video **Solar System Size and Distance.**
- Distribute the pieces of papers containing the planet names.

Note: The Sun is too large and distant to reproduce it in proportion.

Reproducing the solar system outside

C.

- Outside, ask students to reproduce the planet for which their team is responsible and to ensure that their reproduction is as proportional as possible to other teams' planets.
- When the planet reproduction stage is complete, ask students: *How do you arrange the planets to maintain a certain proportion of the distances between them?* Discuss effective strategies to do this.
- You can take photos or videos at different stages of the process.

RETURN TO GROUP

PROPORTIONS AND STRATEGIES

- What strategies did you use to maintain the proportions of the planets and their distances from each other?
- If other classes came to see your reproduction, what would you explain to them?

REINVESTMENT:
From the reproduction of the solar system made by students, we can discuss the rotation of the Earth and its revolution around the Sun.

To learn more about astronomy, you can check out the many free resources from *Discover the universe* https://www.discovertheuniverse.ca/


Sun
Mercury
Venus
Earth
Mars
Jupiter
Saturn
Uranus
Neptune
Pluto