

Sequencing the Planets

Strand	Earth Patterns, Cycles, and Change
Topic	Investigating the planets
Primary SOL	4.7 The student will investigate and understand the organization of the solar system. Key concepts include b) the order of the planets in the solar system.
Related SOL	4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which b) objects or events are classified and arranged according to characteristics or properties; l) models are constructed to clarify explanations, demonstrate relationships, and solve needs. 4.7 The student will investigate and understand the organization of the solar system. Key concepts include a) the planets in the solar system.

Background Information

Our solar system is made up of eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. Each planet has its own orbit and is situated in a certain order in relation to the sun and the other planets. Terrestrial planets are located closer to the sun while gaseous planets are located farther from it. The further away from the sun a planet is, the longer it takes to travel around the sun. For Neptune to orbit the sun one time, it takes approximately 165 Earth years. Scientists theorize that Earth's positioning in the solar system was crucial to its development and the survival of life on our planet.

Materials

- Five sets of color pictures of the planets which can be found on the Internet or through astronomy magazines
- Five sets of planet names – Planet Name Cards attached
- Five pieces of chart paper
- Reference materials on the planets such as encyclopedias, trade books, or Internet sites
- Construction paper for each student
- Crayons

Vocabulary

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Ask the students what they know about the planets. Have people been sent to another planet before? What planet is called the red planet? What planet is closest to the sun? Which one is the furthest away?
2. Explain to the students that today they will be learning the order of the planets and ways to remember this order.

Procedure

1. Provide reference materials for the students to use to find out the order of the planets.
2. Students will use the pictures and planet names to correctly order the planets with their group.
3. When all the members of the group agree that the order of the planets and their labeling is correct, students should raise their hands for their work to be checked.

Conclusion

1. The students will then discuss any patterns that they see in the order of the planets with their teammates. Any patterns noticed should be written on the chart paper.
2. Have students create a mnemonic or a song to help them remember the order of the planets. They should write it on the chart paper.
3. Each group will present their findings and their mnemonic or song to the class. The teacher should encourage discussion and questions.

Assessment

- **Questions**
 - What is the sixth planet?
- **Journal/writing prompts**
 - Explain what being on a planet that is farther away from the sun might be like.
 - Why would astronomers know more about Mars than they do Neptune? Explain.
- **Other**
 - Create an index card for each planet. Give each student a card and have them get into order as quickly as possible without speaking. Repeat until all students have had a chance to participate.
 - Have students create flashcards for the order of the planets.

Extensions and Connections (for all students)

- Have students research and then place the asteroid belt and the Kuiper belt within the order of the planets.
- Have students connect data found from all planets to the order that they pasted on construction paper.

Strategies for Differentiation

- The teacher can have students cut, paste, and color pictures of the planets into science notebooks or on loose leaf paper.

- The class can create a scale model of the solar system in the hallway of the building to better help students remember the order of the planets. This will also help students who have trouble retaining information with a constant reminder by seeing them displayed around the school during their academic day.

Planet Name Cards

To be cut apart. The eight cards make one set.

Mercury	Jupiter
Venus	Saturn
Earth	Uranus
Mars	Neptune