

Reason for the Seasons

Grade Level: P, K, 1, 2

Duration: 20-30 minutes

Classification: Classroom

Subject(s): Astronomy, Geology, Meteorology

Categories (STEM): Science

Keywords: Environment, Earth, Weather, Seasons

Introduction

- Summary: Identify the different seasons and learn the science behind them.
- Description: Students will discuss differences between the four seasons and watch a demonstration of how the Earth's path around the sun creates them.

Vocabulary

- **Perihelion** - The point in the orbit of a planet, asteroid, or comet at which it is closest to the sun.
- **Aphelion** - The point in the orbit of a planet, asteroid, or comet at which it is furthest from the sun.
- **Solstice** - When the sun reaches its highest or lowest point in the sky at noon, marked by the longest and shortest days.

Online Resources: <https://www.nationalgeographic.org/activity/the-reason-for-the-seasons/>
<https://spaceplace.nasa.gov/seasons/en/>

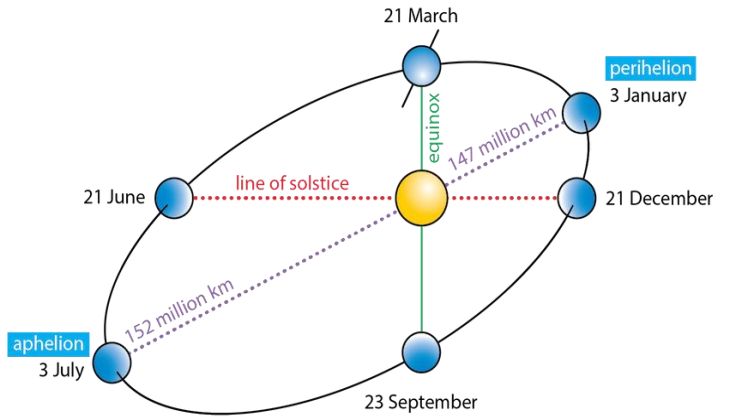
Materials

Materials	Quantity	Reusable?
Seasonal Photos	1 set per 2-3 students	Yes
Blow-up Globe	1 per classroom	Yes
Foam Balls	1 per 2-3 students	Yes
Clay or Play-Doh	1 per 2-3 students	Yes
Toothpicks	2 per 2-3 students	No

Directions

1. Discuss the four seasons and their unique characteristics. Have the students use the five senses to explain the differences.
2. Break students up into groups of 2-3 and have them sort each set of seasonal photos. Did every group identify the seasons the same?

- Using the blow-up globe, identify the equator, poles, and Iowa. Explain how the Earth moves and why it is important to each of these parts.
- Have one student volunteer to be the “sun” while you walk through one rotation of the Earth.
- Discuss how the rotations caused the changing seasons. If time allows, complete the activity extension.



Activity Extension

- Create a model of the sun and Earth using a foam ball, clay, and toothpicks.
- Put a toothpick through the center of the clay ball to represent the poles through the Earth.
- Using the foam ball as a sun, walk through the Earth rotations, as shown in the picture above. Have each student play a role in the process.
- Students should try to identify each of the seasons in the rotation.

Discussion Questions

- How does the rotational axis determine the seasons?
- In Iowa, we have four distinct seasons. Is this the same everywhere?
- What months are winter? Are they the same every year?

What is happening?

- The Earth is on a tilted axis, so one hemisphere is getting more of the sun’s direct rays than the other. This causes summer and winter.
 - The tilt is believed to be caused by a hit to the Earth when it was first forming.
- It takes 365 days, 1 year, for the Earth to rotate around the sun.

Applications:

- Majors - Astronomy, Geology, Meteorology
- Jobs - Astronomer, Meteorologist
- Hobbies – Stargazing, Seasonal hobbies such as skiing or boating, Holidays
- Real-World applications - The Earth really revolves around the sun! The moon orbits the Earth, causing the rising and falling of the tides.



This activity was last updated in fall 2020 by Student Role Models.