

POWERHOUSE SCIENCE CENTER

3615 Auburn Blvd., Sacramento 95821 (916) 674-5000

Topics

Astronomy

Grades

4-8

Duration

60 minutes

Vocabulary

molecule, constellation, light year, meteor, mass

Next Generation

Science Standards

Practices

Asking Questions & Defining Problems

Constructing Explanations & Designing Solutions

Analyzing & Interpreting Data

Core Ideas

ESS1.A The universe and its stars

ESS1.B Earth and the Solar System

Crosscutting Concepts

Patterns

Systems and System Models

Scale, Proportion and Quantity

Space Adventure

Overview

The program shows students a simulated night sky and what they can see from around their homes. Currently visible planets and constellations will be pointed out. Daily motion will be demonstrated. The Milky Way galaxy will be shown. Program will then cover stars and the Sun. Physical properties of objects in space will be discussed. Questions and answers are highly encouraged. Finally, a meteorite will be passed around so students can touch something that came from outer space.

Objectives

- Students will gain insight into how objects in space interact and influence each other.
- Students will understand that the Solar System and its objects are part of the Milky Way galaxy.
- Students will be aware of celestial objects and phenomena that they can view themselves.
- Students will be given the opportunity to ask and answer questions.

Teacher Preparation

- Please arrive at Powerhouse with enough time to allow students and chaperones to use the restroom before the program begins.
- If program starts late, content will be altered to fit available time.
- Planetarium shows require one adult chaperone per six students. Please group students with adults.
- The teacher is required to remain in the planetarium throughout the presentation.
- If your group includes students with special needs, be sure to notify Powerhouse in advance.
- Please insure that no light sources (phones, flashing shoes, etc.) will be used while the room is dark.
- Siblings are not allowed to sit in on the show.
- Planetarium seats a maximum of 70 people.

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Performance Expectations

5-ESS1-1. Support an argument that differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from the Earth

5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the sky.

MS-ESS1-2. Develop and use a model to describe the role of gravity in motions within galaxies and the solar system

Vocabulary

Molecule: a very small particle

Constellation: a grouping of stars that forms a "dot-to-dot" picture

Light year: the distance light travels in one year, about 6 trillion miles

Meteor: a rock from outer space that is burning up as it moves through the atmosphere

Mass: how much matter something is made of

Space Adventure

Extended Learning Activities

Scale of the Solar System

Students create a scale model of the Solar System by folding a length of cash register tape.

Give each student a length of cash register tape about six feet long. Student writes "Sun" at one end and "Dwarf Planets" at the other. Student folds the paper in half lengthwise, forming a crease. Student opens the paper flat and labels the crease "Uranus". Student then brings each end to the middle and folds, then opens the paper again so that the paper is equally divided with three creases. Student labels the crease farthest from the Sun "Neptune" and the crease nearest the Sun "Saturn". Next student folds paper by bringing the Sun end to the Saturn crease. Student opens paper and labels new crease "Jupiter". Student then folds by bringing the Sun end to the Jupiter crease, opens the paper and labels the new crease "Asteroid Belt". Student then folds by bringing the Sun end to the Asteroid Belt, opens the paper and labels the new crease "Mars". Student then folds by bringing the Sun end to the Mars crease. Student then folds this fold in half, creating three creases equally spaced between the Mars crease and the Sun. Student unfolds paper and labels new creases "Earth", "Venus" and "Mercury".

Star Party

Invite your local amateur astronomy club to put on a star party at your school or other location. Astronomy clubs are often a great way for students to see that astronomy can be a lifelong interest. Many astronomy clubs will participate for little or no charge.

Resources

National Science Foundation

<https://www.nsf.gov/news/classroom/astronomy.jsp>

NASA

<https://www.nasa.gov/audience/foreducators/5-8/index.html>

National Informal STEM Education Network

<http://www.nisenet.org/content-keywords/astronomy>

National Science Teachers Association

<http://www.nsta.org/publications/freebies.aspx> (Keyword: Astronomy)