

Planetarium Guide for



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Contact Information

Please contact us with any questions or comments! If there are any particular topics that you would like discussed during your show, please let us know after you have made reservations for the planetarium.

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Resources on the Web

The Nine Eight Planets

<http://www.nineplanets.org>

Solar System Exploration Page

<http://solarsystem.nasa.gov/educ>

HubbleSite

<http://hubblesite.org>

Hands-on Universe

<http://www.handsonuniverse.org>

Views of the Solar System

<http://solarviews.com/eng/homepage.htm>

StarChild

<http://starchild.gsfc.nasa.gov/docs/StarChild/StarChild.html>

Thursday's Classroom

<http://www.thursdaysclassroom.com>

Astronomy Magazine's Intro to Astronomy

<http://www.astronomy.com/asy/default.aspx?c=ps&id=6>

Solar System Grand Tour Summary

In *Solar System Grand Tour*, students will explore our Solar System and visit each planet, comparing and contrasting the planets' features. As a result, they will have a better understanding of the Earth's unique place in our Solar System.

This presentation is 30 minutes long.

Suitable for Grades 3 through 8.

Features

- Visit and “land” on the planets, plus a brief look at the Sun
- Comparison of atmospheres, surface features and sizes of planets in our Solar System
- A description of gravity, the different types of planets, and our Solar System
- Plenty of opportunity to interact as this is a live presentation
- A Mobius strip “ride” at the end

Objectives

At the end of *Solar System Grand Tour*, students will be able to do the following:

1. List at least five planets.
2. Describe some features of at least three planets.
3. Define “rotation” and “revolution” and describe how these differ between Earth and other planets.
4. Compare their weight on Earth, the Moon, and Mars and state whether the gravity is greater or less on each planet.

Astronomy Investigations at Arizona Science Center

Listen to the tall tubes on the Music Landing between the 2nd and 3rd floors. Why do the tubes sound different?

The atmospheres on different planets can be more or less dense than the Earth's and are made of different materials. Do you think that the wind sounds different on Mars and Jupiter than it does on the Earth?

Visit the black funnel-shaped Gravity Well in the lobby. The shape of the gravity well mimics the effects that the gravitational pull of the Sun has on objects in our Solar System.

If you drop a coin down the Gravity Well, does it go slower or faster as it moves closer to the center? Do you think planets move faster or slower when they are closer to the Sun?

Try making two coins go around in opposite directions. What happens if they collide? What could happen if two planets collide? Why don't planets collide?

Concepts

Topics discussed change depending on the presenter and the time of year. Please contact us if you would like any particular concepts addressed.

Asteroid: (also "planetoid") A medium-sized rocky object orbiting the Sun; smaller than a planet, but larger than a meteoroid.

Atmosphere: A blanket of air (toxic or breathable) that surrounds some planets and moons. Clouds indicate that a planet has an atmosphere.

Crater: A large depression in an object made from an asteroid or comet impact.

Dwarf Planet: A round celestial body that orbits around the Sun, has not cleared the neighborhood around its orbit, and is not a satellite.

Gas Giant Planet: A planet that does not have a rocky surface. Gas giants have thick atmospheres that turn into dense liquids inside the planets; they may have rocky cores.

Gravity: A force caused by mass – the more massive an object is, the stronger its gravitational pull. Large planets like Jupiter have very strong gravity; small planets like Pluto have very little gravity.

Greenhouse Effect: The warming of the surface and lower atmosphere of a planet due to trapped thermal radiation (heat) from the sun. Carbon dioxide and water are the primary factors. This effect is very important on Venus and Earth but is very weak on Mars.

Mare: A Latin term meaning "sea". Mare are large, dark areas on the Moon caused by lava flows.

Planet: A round celestial body that orbits around the Sun and has cleared the neighborhood around its orbit.

Revolution: The motion of the Earth and the other objects within the Solar System around the Sun. The Earth takes one year to revolve around the Sun.

Rotation: The spinning of an object on its axis. The Earth takes one day to rotate once.

Solar System: The Solar System refers to the system of our Sun, Sol, which includes all of the objects that orbit it, including the eight planets and their satellites, dwarf planets and their satellites, asteroids, comets, and distant bodies in the Kuiper belt and Oort cloud. Some other stars have similar systems of objects that orbit them.

Star: A large object made of gas that gives off light. Our Sun is the star nearest to the Earth. Stars are bigger than planets; the smallest star would be about 100 times more massive than Jupiter.

Terrestrial Planet: A planet with a rocky surface, such as the Earth.

Arizona State Science Standards Alignment

Solar System Grand Tour includes information that meets the new Arizona State Science Standards as described below. Coding follows this system: SC06-S2C2-01 (Grade 6, Strand 2, Concept 2, POI).

Grade 5

SC05-S6C2-03: Distinguish between revolution and rotation.

SC05-S6C2-04: Describe the role of gravity as an attractive force between celestial bodies.

SC05-S6C3-01: Identify the known planets of the Solar System.

SC05-S6C3-02: Describe the distinguishing characteristics of the known planets in the Solar System.

SC05-S6C3-03: Describe various objects in the sky (e.g. asteroids, comets, stars, meteors/shooting stars).

Grade 7

SC07-S6C3-06: Explain the relationship between common objects in the solar system, galaxy and the universe.