

#3577

BILL NYE THE SCIENCE GUY: PLANETS

Grade Levels: 5-9
24 minutes

DISNEY EDUCATIONAL PRODUCTIONS 1995

DESCRIPTION

Bill Nye takes a brief tour of the solar system and its nine planets. Uses a scale model to show the comparative sizes of the sun and planets and the distances between them. Discusses four theories of the moon's origin and the direction of the planets' orbits. Shows how to make Mars soil.

ACADEMIC STANDARDS

Subject Area: Science (Earth and Space)

- ◆ Standard: Understands the basic features of the earth
 - Benchmark: Knows that night and day are caused by the earth's rotation on its axis
- ◆ Standard: Understands essential ideas about the composition and structure of the universe and the earth's place in it
 - Benchmark: Knows basic patterns of the sun and moon (e.g., the sun appears every day, and the moon appears sometimes at night and sometimes during the day; the sun and moon appear to move from east to west across the sky; the moon appears to change shape over the course of a month)
 - Benchmark: Knows that the earth is one of several planets that orbit the sun, and the moon orbits around the earth

AFTER SHOWING

Discussion Items and Questions

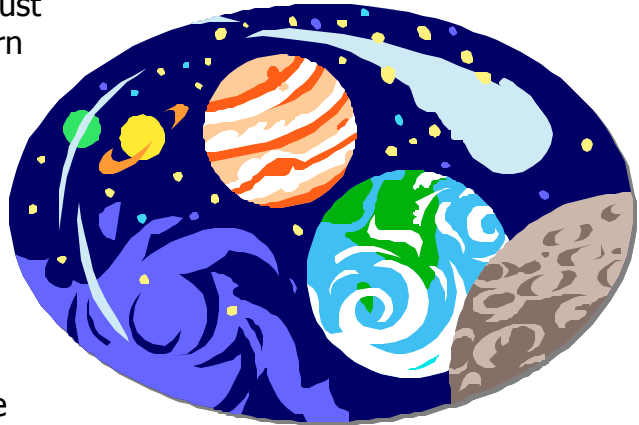
1. In which direction do all the planets orbit around the sun? (The planets orbit the sun in a counterclockwise direction.)
2. Which planet is the hottest in the solar system? (Venus is the hottest planet in the solar system.)
3. Which planet takes the longest time to make one orbit around the sun? (Pluto takes the longest time to make one orbit around the sun.)

Applications and Activities

1. Rusty Planet

Objective: To demonstrate how a chemical reaction can cause soil on a planet to change color.

- Fill a baking pan almost to the top with sand (3 to 5 centimeters from the rim).
- Take a roll of steel wool and cut it into a bunch of 2-centimeter bits. (Be sure to wear gloves to guard against cuts.)
- Mix the steel wool in with the sand.
- Add water to the mixture so that it is saturated and fairly covered with water.
- Put it in a safe place and add water each day when you check on it.
- The steel wool will eventually leave rust deposits in the sand, causing it to turn red.



2. It's Not All Gas

Objective: To compare and contrast the size and distance of the planets in this solar system model.

- Stretch a 27-meter piece of string between two chairs.
- One chair represents the sun and the other chair represents the solar system past Pluto.
- Use the following information to make accurately sized balls of clay (which represent the solid inner planets) and inflated balloons (which represent the gaseous outer planets, except for Pluto).
- Form the clay around or affix the balloon to the string at the appropriate distance from the sun (use a meter stick to measure).

<u>Planet</u>	<u>Circumference</u>	<u>Distance From Sun</u>
Mercury	11mm (clay)	27cm
Venus	27mm (clay)	34cm
Earth	27mm (clay)	58cm
Mars	15mm (clay)	1.5m
Jupiter	28cm (balloon)	3.7m
Saturn	24cm (balloon)	6.3m
Uranus	10.2cm (balloon)	12.7m
Neptune	10.2cm (balloon)	19.7m
Pluto	7mm (clay)	27m

- This model will accurately depict the solar system for students and can be used for extended study.

3. Planet Pizza

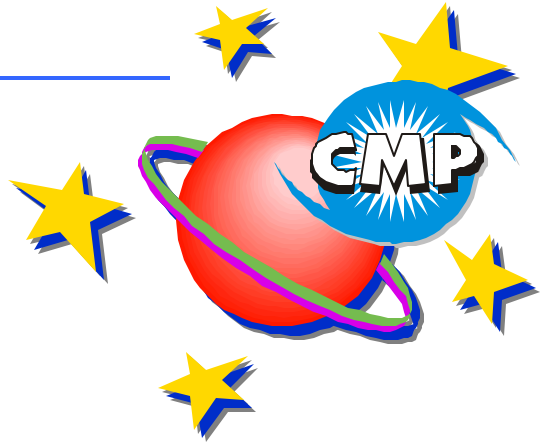
Objective: To design, make, and cook a pizza that resembles a planet or moon in our solar system.

- a. Make fresh dough or purchase ready-made pizza dough or a preformed pizza shell from a grocery store.
- b. Using colored pictures of planets and moons, design your pizza, using edible products that have color and texture.
- c. Use textbooks, journals, and scientific publications for reference pictures.
- d. Consider if the color or texture of the food will change when heated.
- e. Bake according to directions and eat.
- f. Dessert: If you'd rather make a dessert, follow the procedure for the pizza, but make a cake, pie, or other sweet dessert to illustrate the solar body you have designed.

RELATED RESOURCES

Captioned Media Program

- An Alphabet of Space #2449
- Exploring our Solar System #2469
- Fire and Ice: The Outer Planets #3462
- History of Astronomy #3137
- Journey Through the Solar System #2618



World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **BILL NYE LABS**

<http://nyelabs.kcts.org/openNyeLabs.html>

From the famous and wacky Bill Nye the Science Guy. "Teacher's Lounge," "Home Demos," "Demo of the Day," "Ask Bill Nye," and a searchable "T.V. Guide" section. Locate the "Ocean" episodes within the "T.V. Episodes" pull-down menu.

- **BRAIN POP SCIENCE**

<http://www.brainpop.com/science/ecology/watercycle/index.weml>

An award-winning site designed to give kids' brains a workout full of fun. Many animated health, science, and technology movies to choose from. Long movie load time but well worth the wait! Play the content-based quiz while you wait.

- **NASAKIDS**

<http://kids.msfc.nasa.gov/>

Has information on a variety of topics in a simple newsletter format. Straightforward text, graphics, and simple animations.

- **THE NINE PLANETS**

<http://seds.lpl.arizona.edu/billa/tnp/nineplanets.html>

Easy-to-access online multimedia tutorial. Great as a background for the teacher and for strong readers to use independently. Nice graphics and animations to complement a lesson.

- **WELCOME TO THE PLANETS**

<http://pds.jpl.nasa.gov/planets/>

Beautiful photographs directly from NASA. Easy to use.

- **THE PLANETS, MOONS, AND STARS**

<http://library.thinkquest.org/J002809/main.html>

A student-designed ThinkQuest Jr. site. General information. Great as a "How to Complete a Project" sample.

- **ZOOM SCHOOL ASTRONOMY**

<http://www.allaboutsace.com/subjects/astromony/toc.shtml>

Very accessible site for students to use in directed lessons or independently.

- **ONLINE SOLAR SYSTEM LECTURE**

<http://csep10.phys.utk.edu/astr161/lect/index.html>

Comprehensive lecture notes (Web Syllabus: The Solar System 161) from the Department of Physics and Astronomy at the University of Tennessee.