

# Sizing Up the Solar System

**Grades:** 5<sup>th</sup>-8<sup>th</sup> Grade

**Duration:** 60 Minutes

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## Program Description

This program focuses on a simple model of the solar system and discussing both the distances between and the relative sizes (volume) of the planets. It is common to know that there are planets bigger than Earth, but the size comparison between Earth and its planetary family is not common. The same analogy can be said for distances.

## Louisiana GLE:

### Science:

#### Grades 4

1. Ask questions about objects and events in the environment (e.g., plants, rocks, storms) (SI-E-A1)
2. Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations (SI-E-A1)
3. Use observations to design and conduct simple investigations or experiments to answer testable questions (SI-E-A2)
7. Use the five senses to describe observations (SI-E-A3)
9. Select and use developmentally appropriate equipment and tools (e.g., magnifying lenses, microscopes, graduated cylinders) and units of measurement to observe and collect data (SI-E-A4)
10. Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate (SI-E-A5) (SI-E-B4)
11. Combine information, data, and knowledge from one or more of the science content areas to reach a conclusion or make a prediction (SI-E-A5)
12. Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios) (SI-E-A6)

#### Grades 5 – 8

1. Generate testable questions about objects, organisms, and events that can be answered through scientific investigation (SI-M-A1)
2. Identify problems, factors, and questions that must be considered in a scientific investigation (SI-M-A1)
3. Use a variety of sources to answer questions (SI-M-A1)
4. Design, predict outcomes, and conduct experiments to answer guiding questions (SI-M-A2)
6. Select and use appropriate equipment, technology, tools, and metric system units of measurement to make observations (SI-M-A3)

7. Record observations using methods that complement investigations (e.g., journals, tables, charts) (SI-M-A3)
14. Develop models to illustrate or explain conclusions reached through investigation (SI-M-A5)
18. Identify faulty reasoning and statements that misinterpret or are not supported by the evidence (SI-M-A6)
19. Communicate ideas in a variety of ways (e.g., symbols, illustrations, graphs, charts, spreadsheets, concept maps, oral and written reports, equations) (SI-M-A7)
22. Use evidence and observations to explain and communicate the results of investigations (SI-M-A7)

### **Grades 9 – 12**

1. Write a testable question or hypothesis when given a topic (SI-H-A1)
5. Utilize mathematics, organizational tools, and graphing skills to solve problems (SI-H-A3)
7. Choose appropriate models to explain scientific knowledge or experimental results (e.g., objects, mathematical relationships, plans, schemes, examples, role-playing, computer simulations) (SI-H-A4)
8. Give an example of how new scientific data can cause an existing scientific explanation to be supported, revised, or rejected (SI-H-A5)
13. Identify scientific evidence that has caused modifications in previously accepted theories (SI-H-B2)

### **Grade 5**

43. Describe the characteristics of the inner and outer planets (ESS-M-C2)
45. Identify Earth's position in the solar system (ESS-M-C5)

### **Grade 8**

38. Use data to compare the planets in terms of orbit, size, composition, density, rotation, revolution, and atmosphere (ESS-M-C2)

## **Key Terms:**

### **Connections to Permanent Exhibits:**

**Phases of the Moon** – Understand the phases of the moon better by demonstrating the reflection of sunlight for a given moon phase

**Planet Kiosks** – These give some general characteristics of the planets; located on the 2<sup>nd</sup> floor on the Space Center

### **Web Resources:**

#### **NASA**

<http://www.nasa.gov/home/>

**NASA For Kids:** The main page of NASA allows a user to look at a variety of topics of space-related sciences <http://www.nasa.gov/audience/forkids/home/index.html>

This website is loaded with activities, games, and more designed to introduce the young, future generations to the concepts of space science. There is a coloring book you can download, or, for those students already familiar with computers, you can color in pictures by using the mouse

**Lunar and Planetary Institute:** This website contains valuable resources and information revealed from current planetary missions. <http://www.lpi.usra.edu/>

**Planet Quest:** Planet Quest offers insight into planets outside of our solar system. Since the mid-1990's, astronomers have discovered over 200 planets orbiting stars other than our sun, which brings up one of the most famous questions: Are we alone in the universe? <http://planetquest.jpl.nasa.gov/>

## **Pre-Visit Activities**

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