**What Are The Dimensions Of The Solar System?**

**I. Introduction**

 Have you ever imagined how long it would take to travel to other planets in the solar system? If you travel beyond Mars, the distances between the orbits of the planets become very great. It would take several years to travel to the most distant planets in our solar system.

 The solar system is made up of the nine planets and other objects that orbit the sun. These orbits are elliptical, so a planet's distance from the sun will vary. The movement of a planet around the sun is known as its revolution. As planets orbit around the sun, they also spin on their axes. The spinning of a planet on its axis is known as its rotation.

 Planets do not all revolve around the sun and rotate in the same way. For instance, the planets Uranus and Venus display retrograde motion. That means they rotate clockwise rather than counterclockwise like other planets. In addition, the axis of Uranus is nearly parallel to the plane of its orbit. Its direction of rotation is nearly at a right angle to its direction of revolution.

 The four planets closest to the sun (Mercury, Venus, Earth, and Mars) are known as the inner planets. The asteroid belt lies between the orbits of Mars and Jupiter. The planets whose orbits lie beyond the asteroid belt are called the outer planets.

 This Virtual Lab will demonstrate the vast distances between the planets and the relative sizes of the planets. The diameter measurements and travel times are approximate. The times assume that you are traveling in a straight line from the sun to the destination planet, and the distance traveled is the average distance of the planet from the sun.

**II. Procedure**

 1. Start the activity by going to the following website :

<http://www.glencoe.com/sites/common_assets/science/virtual_labs/E28/E28.html> .

 2. Click the Video button to watch the demonstration.

 3. Click the Solar System Guide button to learn interesting facts about the solar system.

 4. Choose a destination from the Destination menu.

 5. Click the Ignition button to launch your flight.

 6. Once the spacecraft stops, click the Scale On button and use the scale to measure the diameter

 of the planet.

 7. Record the approximate diameter of the planet in the Table.

 8. Measure and record the approximate distance from the sun.

 9. Click Return to Sun and repeat step 3 to 7 for the other planets.

**III. Data**

 1. Record your data in the Table below.

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|  **Planet** |  **Average****Distance From** **The Sun (AU)** |  **Approximate** **Travel** **Time (years)** |  **Approximate** **Diameter(km)** |  **Order Of** **Planet From** **Sun** |
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**IV. Analysis & Conclusions**

 **1. How do the sizes of the inner planets (from the sun to the asteroid belt) compare to the**

 **sizes of the outer planets?**

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 **2. How do the distances between the orbits of the inner planets compare to the distances**

 **between the orbits of the outer planets?**

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 **3. How many times larger than Earth is the planet Jupiter? (Hint: Divide Jupiter's**

 **diameter by Earth's diameter.)**

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 **4. How many times larger than Pluto is planet Earth? (Hint: Divide Earth's diameter by**

 **Pluto's diameter.)**

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 **5. How much farther from the sun is the orbit of Neptune than the orbit of Earth? (Hint:**

 **Subtract Earth's average distance from the sun from Neptune's average distance from**

 **the sun.)**

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 **6. What makes human travel to the other planets in our solar system difficult?**

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