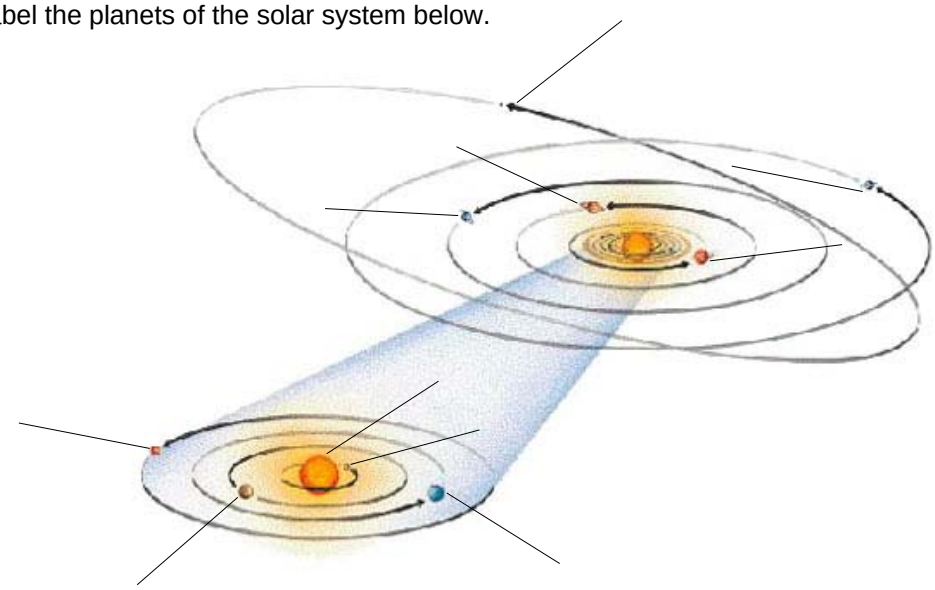
Name:_____ Date:_____

Measuring the Solar System

Activity adapted from *Hands on Science Activities with Real-Life Applications* by Pam Walker and Elaine Wood

1. Label the planets of the solar system below.



2. Study the following chart, which lists the distance of the planets from the Sun in millions of miles. You will convert these distances to astronomical units (AU). One AU equals the distance of Earth from the Sun. This means that 93 million miles is equivalent to 1 AU. In the chart you will see the number 1 at Earth in the AU Equivalent column. To find the astronomical unit for the other planets, you should divide each planet's distance from the Sun by 93,000,000. For instance, for Venus, divide 67,270,000 by 93,000,000. The answer is 0.7 AU. You will record 0.7 in the AU Equivalent column at Venus. Follow this procedure for the remaining planets. Don't forget to label your numbers with the correct units.

Planet Name	***Distance from Sun (in millions of miles)***	***AU Equivalent (in astronomical unit)***
Mercury	36	
Venus	67.27	0.7
Earth	93	1
Mars	141.7	
Jupiter	483.9	
Saturn	887.1	
Uranus	1783.98	
Neptune	2795.5	
Pluto (dwarf planet)	3675.3	

Images excerpted from *First Space Encyclopedia* by DK Publishing

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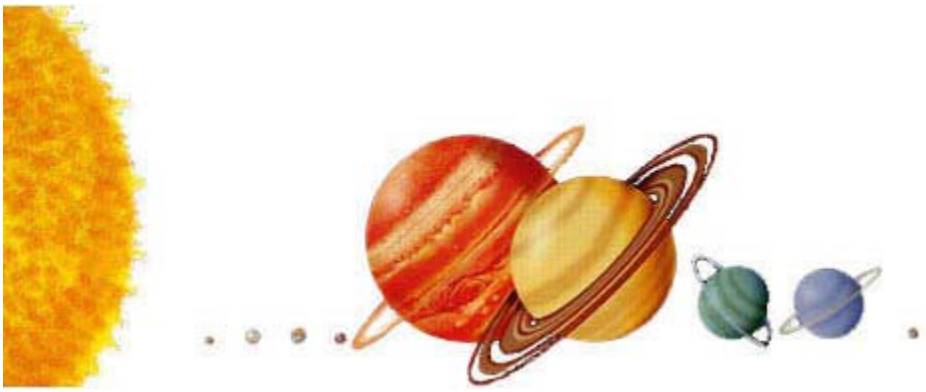
3. Using the image below, measure the distance of each planet from the Sun in millimeters. Compare your distances measured here to the data you calculated above. Is this image to scale?



Planet	*Distance (mm)*
Mercury	
Venus	
Earth	
Mars	
Jupiter	
Saturn	
Uranus	
Neptune	
Pluto (dwarf planet)	

4. Look at the chart below, which gives the diameter of each planet and the Sun in kilometers. The Sun is 1,380,000 kilometers in diameter. You will assign the Sun a diameter value of 1. To determine the size of each planet in relation to the size of the Sun, divide 1,380,000 km by the diameter of each planet. For example, for Mercury, divide 1,380,000 km by 4,989. The answer is 277. This means that Mercury is 277 times smaller than the Sun in terms of diameter. Place this number in the column of the chart marked "# Times Smaller Than Sun." Repeat this procedure for the other planets.

Object	*Diameter (km)*	*# Times Smaller Than Sun*
Sun	1,380,000	
Mercury	4,989	277
Venus	12,392	
Earth	12,757	
Mars	6,759	
Jupiter	142,749	
Saturn	120,862	
Uranus	51,499	
Neptune	44,579	
Pluto (dwarf planet)	2,414	

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Answer Key:
Measuring the Solar System

Planet Name	*Distance from Sun (in millions of miles)*	*AU Equivalent (in astronomical unit)*
Mercury	36	.39
Venus	67.27	0.7
Earth	93	1
Mars	141.7	1.52
Jupiter	483.9	5.2
Saturn	887.1	9.54
Uranus	1783.98	19.18
Neptune	2795.5	30.06
Pluto (dwarf planet)	3675.3	39.52

Object	*Diameter (km)*	*# Times Smaller than Sun*
Sun	1,380,000	
Mercury	4,989	277
Venus	12,392	111.36
Earth	12,757	108.17
Mars	6,759	204.16
Jupiter	142,749	9.67
Saturn	120,862	11.42
Uranus	51,499	26.797
Neptune	44,579	30.956
Pluto (dwarf planet)	2,414	571.66

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