

# MODELING THE SOLAR SYSTEM

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## 23 POINT LAB

### BACKGROUND

Use the following information to make your model of the solar system:

Sun or Planet	Diameter (km)	Average Distance from The Sun (km)
Sun	1,388,000	0
Mercury	4,880	57,900,000
Venus	12,100	108,000,000
Earth	12,700	149,600,000
Mars	6,780	228,000,000
Jupiter	139,800	778,000,000
Saturn	116,000	887,000,000
Uranus	50,800	1,784,000,000
Neptune	49,200	2,794,000,000

### CALCULATIONS

To illustrate the sizes and distances of the planets in our solar system you are going to scale these values. Use the following information to help calculate your model's scale.

#### Model Scale:

$$1 \text{ km} = 0.0002 \text{ mm}$$

#### Helpful conversions:

$$1000 \text{ mm} = 1 \text{ m}$$

$$10 \text{ mm} = 1 \text{ cm}$$

*Example Calculation: Pluto 2,302 km diameter and average distance from the sun is 4,400,000,000*

$$2,302 \text{ km} \times \frac{0.0002 \text{ mm}}{1 \text{ km}} = 0.46 \text{ mm diameter}$$

$$4,400,000,000 \text{ km} \times \frac{0.0002 \text{ mm}}{1 \text{ km}} \times \frac{1 \text{ m}}{1000 \text{ mm}} = 880 \text{ m distance}$$

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_ PERIOD: \_\_\_\_\_

**Directions:** Answer in proper units. For instance, if you have more than 10 millimeters, convert it to centimeters. If you have more than 1,000 millimeters convert your answer to meters. Include units in your answers. (9 pts)

Sun or Planet	Diameter	Average Distance from The Sun
Sun		
Mercury		
Venus		
Earth		
Mars		
Jupiter		
Saturn		
Uranus		
Neptune		

## APPLICATION

1. Using the information calculated above, make a paper for each object. Many objects are too small to cut out, so make a paper with the name of the object, draw it to scale and include the actual size and the scale size on the paper. (9 pts)
2. With your teacher, place your objects outside to illustrate our solar system to scale. If you are absent or cannot place your planets with your teacher print a map of the school using something like Google Maps. To scale, illustrate the orbital radius of the planets around the school. (5 pts)