$\qquad$
$\qquad$ Period $\qquad$ Date $\qquad$

## Planet \& Object Distances and Diameters

It is difficult to accurately represent the sizes and distances of object in the solar system on the same diagram as you see in your book and on other images. If the size of the sun and the planets were drawn to the same scale as the distances on the diagram, the sun would be tiny; you may not be able to see the dot. On the other hand, if the distances were drawn to the same scale as the sizes of the planets, the diagram would be a mile or kilometer long. Therefore, you will create a model for each.

You will use the data below to create scaled models. Follow these instructions:

1. To figure the scaled distance from the sun, divide the number of millions of kilometers by 10 to calculate the number of centimeters you will draw that object from the sun. Mercury has been done for you.
2. To figure the scaled diameter for your model, divide the Actual Diameter by 500 to get the diameter of the planet you are drawing in millimeters. Mercury has been done for you.
3. Convert the number of millimeters of the scaled diameter to centimeters by dividing the number of millimeters by 10 . This may make it easier for you to measure and/or draw the planets to scale.

| Scaled Distances of the Planets |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Planet or object | Actual Average Distance from the Sun (millions of km) | $\begin{aligned} & \text { Scaled Distance from } \\ & \text { the Sun } \\ & \text { (cm) } \\ & 1 \mathrm{~cm}=10,000,000 \mathrm{~km} \end{aligned}$ | Actual Diameter (km) | Diameter of scale model in centimeters (cm) $1 \mathrm{~cm}=5000 \mathrm{~km}$ |
| Mercury | 58 | $58 \div 10=5.8 \mathrm{~cm}$ | 5,000 | 1 cm |
| Venus | 108 | 10.8 | 12,000 | 2.4 |
| Earth | 150 | 15 | 12,800 | 2.56 |
| Mars | 228 | 22.8 | 6,800 | 1.36 |
| Asteroid Belt | 450 | 45 | VARIES |  |
| Jupiter | 778 | 77.8 | 143,000 | 28.6 |
| Saturn | 1433 | 143.3 | 120,000 | 24 |
| Uranus | 2872 | 287.2 | 51,000 | 10.2 |
| Neptune | 4495 | 449.5 | 50,000 | 10 |

The Kuiper belt is an elliptical plane in space spanning from 30 to 50 times Earth's distance from the sun, or 2.5 to 4.5 billion miles ( 4.5 to 7.4 billion kilometers). The belt is similar to the asteroid belt found between Mars and Jupiter, although the objects in the Kuiper Belt tend more to be icy rather than rocky.
Scientists estimate that thousands of bodies more than 62 miles ( 100 km ) in diameter travel around the sun within this belt, along with trillions of smaller objects, many of which are short-period comets. The region also contains several dwarf planets, round worlds too large to be considered asteroids and yet not qualifying as planets because (1)they're too small, (2)on an odd orbit, and (3)don't clear out the space around them the way the 8 planets do.
(http://www.space.com/16144-kuiper-belt-objects.html)

