Name_____   Date_____

Chart 1: Bringing the Solar System Down to Earth

1. Look at Chart 1 (below), which gives the diameter of the planets and the sun in kilometers.

2. The sun is 1,380,000 km in diameter. You will assign the sun a diameter value of 1.

3. To get the diameter value of Mercury, divide 1,380,000 km by 4989. The answer would be 277. Place this number in the part of the chart marked "# times smaller than the sun." Repeat this procedure for the other eight planets. For instance, Venus would be 1,380,000 km divided by 12,392 km. Record this value in Chart 1.

4. For the last column in Chart 1, you will assign a scaled-down value for each of the planets. Begin with the sun and assign the sun a value of 1 meter (1000 mm). Calculate the value of the planets by dividing 1000 by the number of times smaller you calculated that planet to be than the sun. For instance, Mercury will be calculated by dividing 1000 by 277. The answer will be 3.6 mm. This will be entered in the chart. Do this for each of the planets.

5. When the chart is complete, the last column will represent the diameter your group will use to represent each planet in the activity.

Object	Diameter (km)	# Times Smaller than Sun	Scaled-Down Diameter (mm)
Sun	1,380,000		
Mercury	4,989		
Venus	12,392		
Earth	12,757		
Mars	6,759		
Jupiter	142,749		
Saturn	120,862		
Uranus	51,499		
Neptune	44,579		
Pluto	2,414		

Excerpted from *Hands on Science Activities with Real Life Applications* by Pam Walker and Elaine Wood.

Chart 2: Bringing the Solar System Down to Earth

1. Study Chart 2 (below), which lists the distance of the planets from the sun in millions of miles. Your group will convert these distances to astronomical units (AU). 1 AU is the distance of the earth from the sun. This means 93 million miles is equivalent to 1 AU. In Chart 2 you will see the number 1 under AU for Earth. To find the astronomical unit for the other eight planets, you should divide each planet's distance from the sun by 93 million. For instance, Venus is 0.7 AU. To arrive at that figure, the distance of Venus from the sun, 67.27 million miles, is divided by 93 million. You will record 0.7 in Chart 2 under AU. Follow this procedure for the remaining planets.

2. In the last column of Chart 2, you will calculate the relative distance from the sun by assigning a value of 1000mm (1 meter) for the distance of the earth from the sun – I AU. Place 1000 mm in the last column on Chart 2. The distance from Venus to the Sun will be 700mm.

3. Do this for the remainder of the planets.

Planet Name	Distance From Sun (in millions of miles)	AU Equivalent (in astronomical unit)	Scaled-Down Diameter (in mm)
Mercury	36		
Venus	67.27	0.7	700
Earth	93	1	1000
Mars	141.7		
Jupiter	483.9		
Saturn	887.1		
Uranus	1783.98		
Neptune	2795.5		
Pluto	3675.3		

Excerpted from *Hands on Science Activities with Real Life Applications* by Pam Walker and Elaine Wood.