Astronomy worksheet

Name-_____

Making a scale drawing of the solar system

This exercise is designed to acquaint you with the absolute and relative size of the planets and some of their satellites. The diameters of the bodies and also the planet orbits will be drawn to scale.

Determining the diameters

Complete the following table by using a scale of 1cm equaling 10,000 km of actual distance.

Actual diameter | 1cm
|Scale diameter (10,000 km)

Object	Actual diameter	Scale diameter
Mercury	4,900 km	
Venus	12,100 km	
Earth	12,800 km	
Moon	3,500 km	
Mars	6,800 km	
Jupiter	142,800 km	
Io	3,640 km	
Europa	3,050 km	
Ganymede	5,270 km	
Callisto	5,000 km	
Saturn	120,000 km	
Titan	5,800 km	
Uranus	50,800 km	
Neptune	48,600 km	
Triton	3,700 km	
Pluto	2,500 km	

Along the left side of a sheet of paper, make a long straight line with a ruler. Measure and draw lines from this to represent each of the planets. Please draw lines for the satellites separately from the planets.

Thee diameter of the sun is 1,392,000 km. How many sheets of paper would be required to draw the diameter of the sun to this same scale?

Planet Orbits

Complete the following table using the scale of 1 m equals the average distance from the earth to the sun.

Another distance unit used by astronomers is known as the astronomical unit (AU), defined as follows:

1 astronomical unit = distance from the Earth to the Sun

$$\underline{\text{Average orbit radius}} | \frac{1 \text{ m (AU)}}{149.60 * 10^6 \text{ km}} = \text{ scale orbit}$$

Planet	Average orbit radius millions of km(10^6)	Scale orbit meters (also AU)
Mercury	57.91	
Venus	108.20	
Earth	149.60	
Mars	227.94	
Jupiter	778.33	
Saturn	1,429.99	
Uranus	2,869.57	
Neptune	4,496.60	
Pluto	5,911.77	