

Lab - Solar System Model

Purpose: To draw a scale model of the solar system and to relate these to their true distances.

Part 1: Assigned planet or objects: _____

Part 2: Determining a usable scale

As a class, we will determine a suitable scale for the size of the planets and their distances. The scales for each do not have to be the same.

Distance between objects in space: 1 m = _____

Size of planet: 1 m = _____

Part 3: Data Collection and Scaling

- 1) Using your textbook or other resources, determine the distance of your planet or moon from the Sun.
- 2) Determine the distance from the Sun using our scale. How far away from the sun will you draw your planet?
- 3) Determine the diameter of your planet or moon using your textbook.
- 4) Convert the diameter using our scale for this activity. How big will you make the planet?
- 5) Using your resources, determine these other pieces of information about your planet:

Number of moons	
Rotation (Earth time)	
Revolution (Earth time)	
Average Temperature ($^{\circ}\text{C}$)	

Part 4: Drawing the model.

- 1) Obtain 2 pieces of chalk and a ruler or meter stick from your teacher. Go out to parking lot and the teacher will give you a starting point to begin making your solar system model.
- 2) With one color of chalk, draw your planet or moon the appropriate distance away from the sun and draw it an appropriate size. If the planet has any moons, draw the appropriate number of moons around the planet.
- 3) Then, in a box near the planet, put the following information: Distance from sun (km), diameter (km), rotation and revolution (Earth time) and average temperature ($^{\circ}\text{C}$).

Part 5: Questions

- 1) What did this activity show you about the distances between planets of our solar system?
- 2) What did this activity show you about the relative size of the planets?
- 3) Why are the gas giants called giants?
- 4) Determine the size of Sun you would need to draw using our scale. How much bigger is the Sun than the largest of the planets? The smallest?
- 5) Why does it take light so much longer to get to the outer planets?
- 6) Why do the outer planets have more moons?
- 7) How would this model be different if we were to use the same scale for the size and distance between the planets?
- 8) Why is a scale necessary to make this model? Couldn't we just put the planets wherever we wanted?