Sizing the Solar System

Directions: Write down on a sheet of notebook paper the purpose. background information and answer the questions in the procedures. Make sure to include part of the question in your answer.

Purpose: How do the different celestial bodies compare in size to each other in our solar system?

Background information:

- Radius – distance from the center to the edge of a circle or sphere.

Procedures:

1. Look at the supplies provided in the plastic container / bag. You have many different size objects. . You can use one object for more than 1 celestial body.

2. Copy the data table below: You will do the "actual object" at the end of the lab.

Celestial Body	Hypothesis (Guess)	Actual Object	Justification (why)
Mercury			
Venus			
Earth			
Moon			
Mars			
Jupiter			
Saturn			
Uranus			
Neptune			
Pluto (Ice world)			

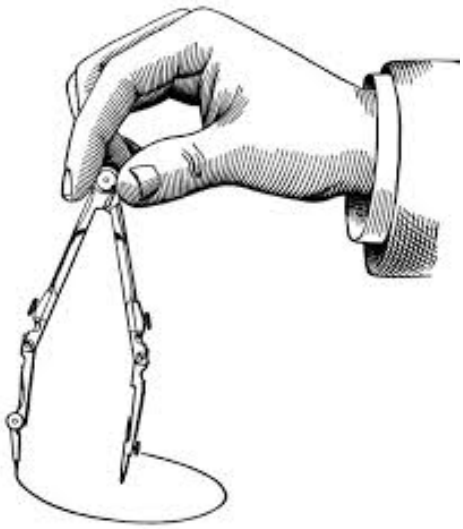
3. For each celestial body in the solar system, select one of the objects as a representation of their size. You may choose one object for more than one celestial body.

4. Finish the table below using the scale factor of 6,371km = 4 cm. This is the radius of the Earth. Do this by multiplying the "multiply factor" by 4 to finding the radius of each of the celestial bodies (objects in space) below:

5. Copy the data

Celestial Body	Diameter in KM	Proportion radius (cm)
Mercury	2,357.27	
Venus	6,052.45	
Earth	6,371	
Earth's Moon	1,911.3	
Mars	3,376.63	
Jupiter	70,081	
Saturn	59,887.4	
Uranus	25,933.68	
Neptune	24,146.09	
Pluto (Ice world)	1,146.78	

6. Take a compass and measure from the end of the pencil to the tip of the metal compass on a ruler to the exact distance the radius of each celestial body is. Then draw a circle using the compass to show how large the celestial object is compared to the other objects in space. Try fitting as many circles as you on a single sheet of paper.



7. Do this for all celestial bodies that are under 15 cm.

8. When you are done using the compass switch it for a piece of string. Using only a ruler (or meter stick), piece of string and a pencil draw in the other circles for all the rest of the celestial bodies.

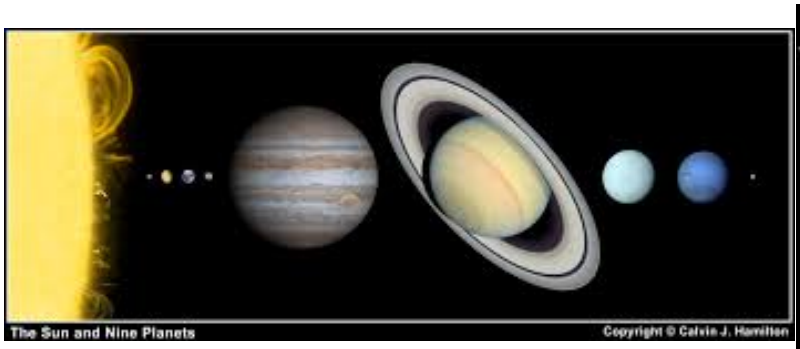
9. Now go back and figure out which object would been a more accurate representation of each planet from the plastic container/bag. Record your answers in the data table.

10. In the justification column - write why you chose the object that you did.

11. Check your answers in the data table with the teacher.

12. Continue on to the analyzing data questions below.

Analyzing the Data:



1. Which planet is similar in size to Earth?
2. Which planet is the largest?
3. What do you notice about the size of the first 4 planets?
4. What do you notice about the size of the last 4 planets?
5. Looking at all the celestial bodies together describe 3 observations you can make.
6. Why do you think Pluto is so small?
7. Why do you think the first 4 planets are so much smaller than the last four?
8. Why do you think that almost all posters and images that are created for classrooms have the distances between the object wrong?
9. Why do you think that almost all posters and images that are created for classrooms have the sizes of the planets not to scale?
10. Which picture above (right or left) does a better job of modeling our solar system? Give reasons (3 or more) of why you chose the picture you did.
11. What are 3 reasons why the other picture was not a good picture of our solar system.
12. Using both Inquiry Size and Distance draw a sketch (about not exactly) of what the solar system actually looks like. Think both about the distance between celestial bodies as well as the size of the planets.
13. Write a sentence or two about what you learned in inquiries about the Size and Distance of planets in our solar system.