



(A) Student Handout. Solar System Predictions

NAME: _____

1. Draw your predictions of the Solar System. Your teacher will give you directions.

Prediction 1:

Prediction 2:

**(B) Student Instruction Sheet. Solar System Beads****Introduction:**

We think about planets *revolving around* the Sun, but do not think about *how far* each planet *is* from the Sun. Astronomers use the distance from the Sun to the Earth as an “Astronomical Unit,” or AU. This unit gives us an easy way to calculate the distances of the other planets from the Sun.

Astronomical Unit: 1 AU = ~150 million kilometers (93 million miles)

Directions:

You will construct a distance model of the Solar System to scale, using colored beads as planets. The chart on the next page shows the planets and asteroid belt in order along with their distance from the Sun in astronomical units.

For this activity 1 AU = 10 cm

1. Complete the chart by multiplying each AU distance by our scale factor of 10 cm per AU. This procedure will give you the measurement of each planet in cm for your model.
2. Use the new distance (in cm) to construct a scale model of our Solar System.
3. Start your model by cutting a 4.5 m piece of string.
4. Use the distances that you have calculated in the chart below to measure the distance from the Sun on the string to the appropriate planet and tie the colored bead in place
5. When you are finished, complete the “Planet Bead Calculation Sheet” and show your model to your teacher.

Note:

If you were traveling at the speed of light (~300,000 kilometers per second), it would take 8 minutes to travel from the Sun (Earth’s nearest star) to the Earth (1 AU). It would take 4.3 years at the same speed to reach the next nearest star to Earth, Alpha Centauri.

**(C) Student Worksheet. Planet Bead Calculation Sheet**

Planet	AU	Scale Value (cm)	Color
Sun	0.0		
Mercury	0.4		
Venus	0.7		
Earth	1.0		
Mars	1.5		
Asteroid Belt	2.8		
Jupiter	5.0		
Saturn	10.0		
Uranus	19.0		
Neptune	30.0		
Pluto (Dwarf Planet)	39.0		

Compare your bead model to the predictions you made in *(A) Solar System Predictions*.

1. How close was your prediction to the actual model? What are the differences and similarities between the model and your predictions?

2. When you go home and show your family or friends your bead model, what will you tell them was the most surprising thing you learned about the solar system?

**(D) Student Worksheet. Farmer's Market Solar System**

Working with your partner or group, discuss the fruits and vegetables your teacher has provided. For each body in the solar system, select one of these as a representation of their size in relationship to each other. In the justification column, explain why you believe this particular fruit or vegetable to be the best choice.

Planet	Object	Justification
Mercury		
Venus		
Earth		
Moon		
Mars		
Jupiter		
Saturn		
Neptune		
Uranus		
(Pluto)		