Making Models Lab

It's a Long Way to Neptune!

Astronomers use astronomical units and light-years to measure large distances in space. In this lab, you will use astronomical units (AUs) to compare the distances between planets in our solar system. One astronomical unit is the distance from Earth to the sun, approximately 150,000,000 km.

You will also use astronomical units to place the orbital positions of these planets in a scale model and answer questions based on your model.

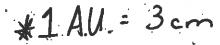
OBJECTIVES

Convert and apply data to create a model of the solar system and relative orbital positions of the planets.

Create an accurate scale representation of the solar system.

MATERIALS

- adding machine paper tape
- calculator
- meterstick



* Sun starts @ Ocm

SAFETY

PROCEDURE

1. Use the data in the following table as a guide to build your model.

DISTANCES OF PLANETS FROM THE SUN

Planet	Distance from the sun (AU)
Mercury	0.39 *3 =
Venus	0,72 × 3 =
Ëarth	1.0 ×3=
Mars	1.52 x3=
Jupiter	5.20 ×3 =
Saturn	9.54 *3=
Uṛanus ,	19.19 ×3 =
Neptune	30.06 ×3=
Pluto	34.50×3=

Name	Class	Date	
It's a Long Wa	y to Neptune! continued	·	
2. Use the scale	e 1 AU = 2 cm for your mod	el.	
3. Fold a 2 m si into two 1 m	rip of adding machine paper sections.	r tape exactly in half so it	is divided
4. Draw a solid	line along the fold, and labe	el the line "Sun."	
-	distance between the sun as Show your work below.	nd Mercury according to t	he scale o
	E	¥5	
	alculation for step 5, draw a te right of the sun on your m		
7. Repeat step 5	for Venus. Show your work	k below.	1.
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			i
			ř.
8. Repeat step 6 Mercury.	for Venus, but label Venus	on the side of the sun opp	osite to
the sun. Whe	tting the planets, making sur n you are finished, you will planets on the opposite side.	have four planets on one	
NALYSIS AND	CONCLUSION		
1. Explain Why	do astronomers use the termin the solar system?	n astronomical unit when	describin
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It's a Long Way t	to Neptunel continued	ill g	
2. Making inferential in a year, or 9.5	ces Would the term <i>light-year</i> —5 trillion kilometers—be useful in	the distance that n a model of the s	light travels olar system
		,	
*			
-	,		
	usions If we were living on Mar nomical unit represent? Why?	rs, not Earth, wha	t distance.
	<u> </u>		
. Making inference would it also be	ces If your model were based or e an accurate representation of th	n a Martian astron ne actual distances	omical unit, ? Explain.
;	* * *		-
		Dala 1	
30 AU and 100	risons The objects in the Kuiper AU from the sun. How much m of your model to include the ent	ore tape would yo	
30 AU and 100 add to <i>one</i> side Applying ideas	AU from the sun. How much m	ore tape would your Kuiper Belt?	ou need to
30 AU and 100 add to one side Applying ideas the sun. Indicate of dots. Drawing Conclusions	AU from the sun. How much m of your model to include the ent	ore tape would your Kuiper Belt? veen 2.1 AU and ton your model w	ou need to 3.3 AU from with a series
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3. Making Inferenc	es Why do you think the aster	oid belt stays wit	hin the
distances given	in question o?		
- 3			
). Evaluating Mode	els If everyone in your class useful	sed a different sca 1? Why or why no	ale for
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D. Evaluating Mode floor of the clas the sun in the ce	els Place the strips of tape creasoom. Arrange them like the senter of the hub. What do you of your models?	ated by all the gro	oups on the
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