LESSON MAKER PRO

Planet Distance Lab

Use rounded average distances from the Sun. For Problems 1–6, use 1 cm = 100 million km.

GRADE 6 · 6.4

6.4 "Analyze and use data to determine scale properties and characteristics of objects in the solar system including sizes, distances, orbital periods, basic composition, and ability to support life."

NAME _____ DATE _____

SCALE THE DISTANCE

A scale model uses a short length to stand for a much larger distance. To find a model distance, divide the real distance by the distance represented by 1 cm. Keep the same scale when you compare objects.

WORKED EXAMPLE

A model uses 1 cm for 40 million km. A space probe is 120 million km from the Sun. How far from the Sun should its marker be?

1. Each centimeter stands for 40 million km.
2. Divide: 120 / 40 = 3.
3. Place the marker 3 cm from the Sun.

Answer: 3 cm

PRACTICE 6 problems

1 Use the table. How far from the Sun should Venus be on the model?

AVERAGE DISTANCE FROM THE SUN

Planet	Million km
Venus	110

ANSWER _____

2 Use the table. How far from the Sun should Mars be on the model?

AVERAGE DISTANCE FROM THE SUN

Planet	Million km
Mars	230

ANSWER _____

3 Use the table. How far from the Sun should Jupiter be on the model?

AVERAGE DISTANCE FROM THE SUN

Planet	Million km
Jupiter	780

ANSWER _____

4 Earth's marker is 1.5 cm from the Sun on the model. What real distance does this represent?

ANSWER _____

5 Use the table. How far from the Sun should Saturn be on the model?

AVERAGE DISTANCE FROM THE SUN

Planet	Million km
Saturn	1,430

ANSWER _____

6 Use the table. How much farther from the Sun is Mars than Earth in real distance? How much farther is it on the model?

AVERAGE DISTANCE FROM THE SUN

Planet	Million km
Earth	150
Mars	230

ANSWER _____

_____

APPLY IT Show your work

1 A science museum marks planet distances along a walkway. Each meter represents 100 million km. Using the table, how far apart should the Mars and Jupiter markers be?

AVERAGE DISTANCE FROM THE SUN

Planet	Million km
Mars	230
Jupiter	780

ANSWER _____

2 A gaming club makes a solar system board. Each centimeter represents 50 million km. Using the table, how much space should the club leave between the Earth and Mars markers?

AVERAGE DISTANCE FROM THE SUN

Planet	Million km
Earth	150
Mars	230

ANSWER _____

CHALLENGE One step up

A 30 cm strip starts at the Sun and must reach Neptune, about 4,500 million km away. Choose the smallest scale that fits: 1 cm = 50, 100, or 150 million km. Explain your choice with calculations.

WORK SPACE AND ANSWER

ANSWER KEY

Planet Distance Lab

GRADE 6 · 6.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the table. How far from the Sun should Venus be on the model?	**1.1 cm**
2	Use the table. How far from the Sun should Mars be on the model?	**2.3 cm**
3	Use the table. How far from the Sun should Jupiter be on the model?	**7.8 cm**
4	Earth's marker is 1.5 cm from the Sun on the model. What real distance does this represent?	**150 million km**
5	Use the table. How far from the Sun should Saturn be on the model?	**14.3 cm**
6	Use the table. How much farther from the Sun is Mars than Earth in real distance? How much farther is it on the model?	**80 million km in real distance; 0.8 cm on the model**

PART 2 · APPLY IT

1. **5.5 m** The markers are 2.3 m and 7.8 m from the Sun. Subtract: 7.8 - 2.3 = 5.5 m.
2. **1.6 cm** The real distances differ by 230 - 150 = 80 million km. Divide by 50 million km per centimeter to get 1.6 cm.

CHALLENGE

Use 1 cm = 150 million km. The three scales would place Neptune 90 cm, 45 cm, or 30 cm from the Sun, respectively. Only 30 cm fits.

Distances are rounded averages, not fixed positions. Accept equivalent decimal forms with correct units.