

Rover Motion Trace

Use measured data to build and interpret a distance-time graph.

7.7.C “measure, record, and interpret an object's motion using distance-time graphs; and”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline phrases that tell what belongs on a distance-time graph. Circle statements that explain what a line shape can show about an object's motion.

A Rover's Test Run

- ① To study motion, scientists measure how far an object is from its starting point at regular times. During a test, a rover moved along a straight hallway. Its distance was recorded every two seconds. The data table below shows the rover's measurements. A distance-time graph can turn these number pairs into a picture of the rover's motion. The graph shows its motion.

ROVER DISTANCE MEASUREMENTS

Time (seconds)	Distance from starting point (meters)
0	0
2	4
4	12
6	12
8	20

- ② On a distance-time graph, time goes on the horizontal axis and distance from the starting point goes on the vertical axis. Label each axis with units, such as seconds and meters. Plot each time and distance pair as one point. Connect points in time order. A rising line shows increasing distance. A flat line shows no change in distance.
- ③ Line steepness shows how quickly distance changes. For two runners graphed with the same axes, a steeper rising line represents greater speed. Find speed during an interval by dividing the change in distance by the change in time. A downward line can show motion back toward the starting point. Read the scale before comparing points or slopes.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What point would you plot for the rover's measurement at 4 seconds? Write the time first, then the distance.

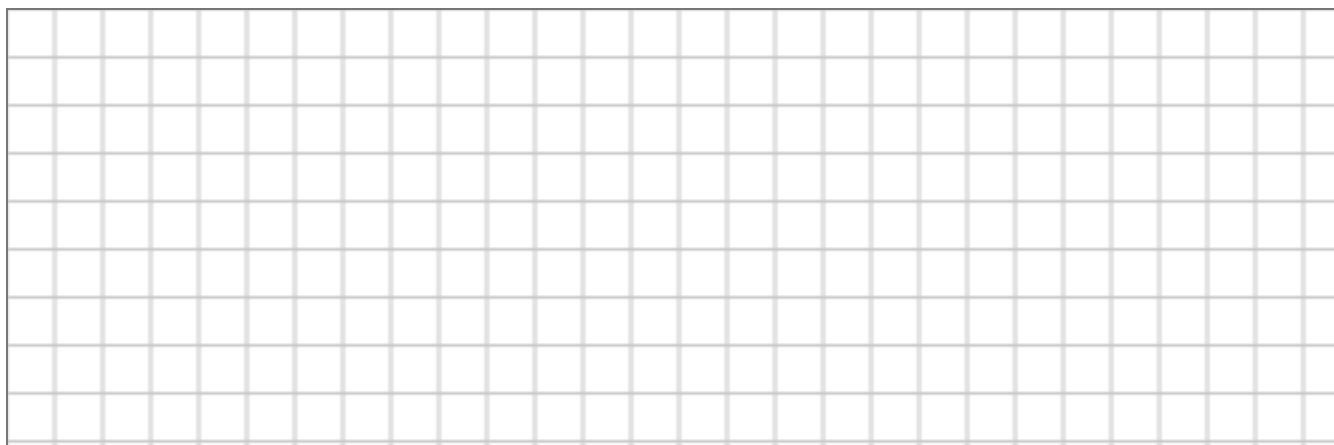
2 During which time interval did the rover's distance from its starting point stay the same?

3 How far did the rover move from 2 seconds to 4 seconds? Show the change in distance.

4 If you graph the rover's data, what kind of line segment connects the points at 4 seconds and 6 seconds? What does it mean?

3 YOUR TURN _____ Your own words

Create your own distance-time graph for an object that moves, pauses, and then moves again. Label both axes with units, plot and connect at least four points, include one flat segment, and write one sentence explaining what the flat segment shows.



PART 1 • READ AND MARK

Underline phrases that tell what belongs on a distance-time graph. Circle statements that explain what a line shape can show about an object's motion. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What point would you plot for the rover's measurement at 4 seconds? Write the time first, then the distance.	(4 seconds, 12 meters)
2	During which time interval did the rover's distance from its starting point stay the same?	From 4 seconds to 6 seconds.
3	How far did the rover move from 2 seconds to 4 seconds? Show the change in distance.	$12\text{ m} - 4\text{ m} = 8\text{ m}$
4	If you graph the rover's data, what kind of line segment connects the points at 4 seconds and 6 seconds? What does it mean?	A flat, horizontal segment. The rover's distance from the starting point did not change, so it was stopped.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Sample graph: Label the horizontal axis Time (seconds) and the vertical axis Distance from starting point (meters). Plot and connect (0, 0), (2, 4), (4, 4), and (6, 10). The flat segment from 2 to 4 seconds shows that the object paused.

Accept equivalent coordinate notation and clear explanations based on the table. For Your Turn, accept any correctly labeled distance-time graph with at least four connected points, a flat segment, and a matching explanation.