

Lesson 7: Graphs and Stories

Reading Distance/Time Graphs

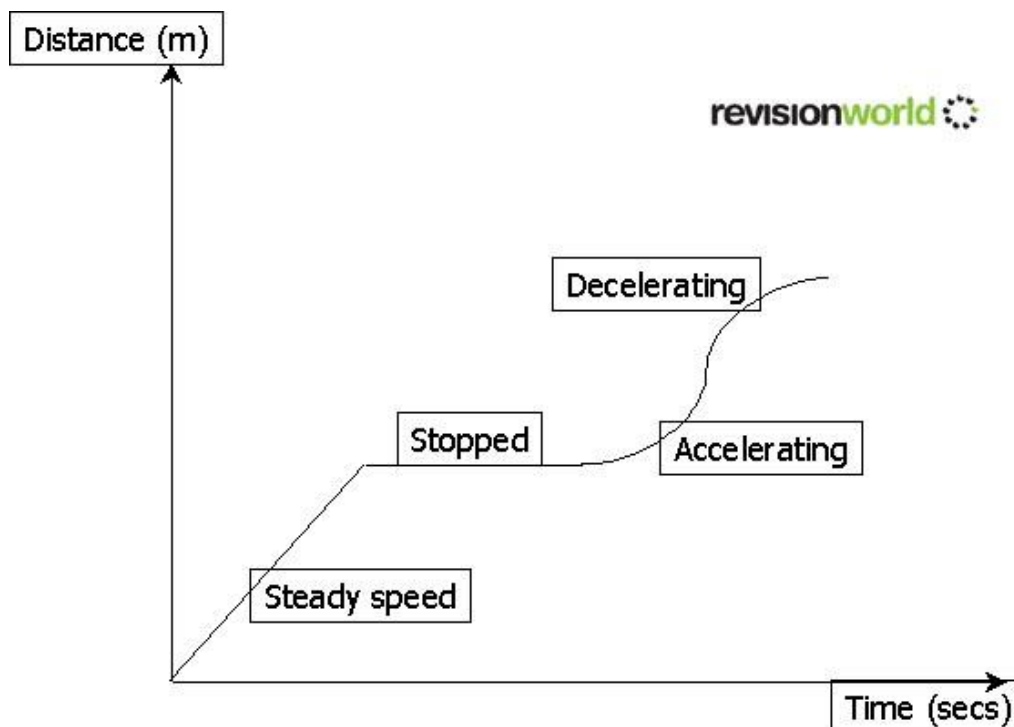
A distance/time graph shows the relationship between an object's position (related to a starting point) and time. Time is always moving forward, and the position can vary.

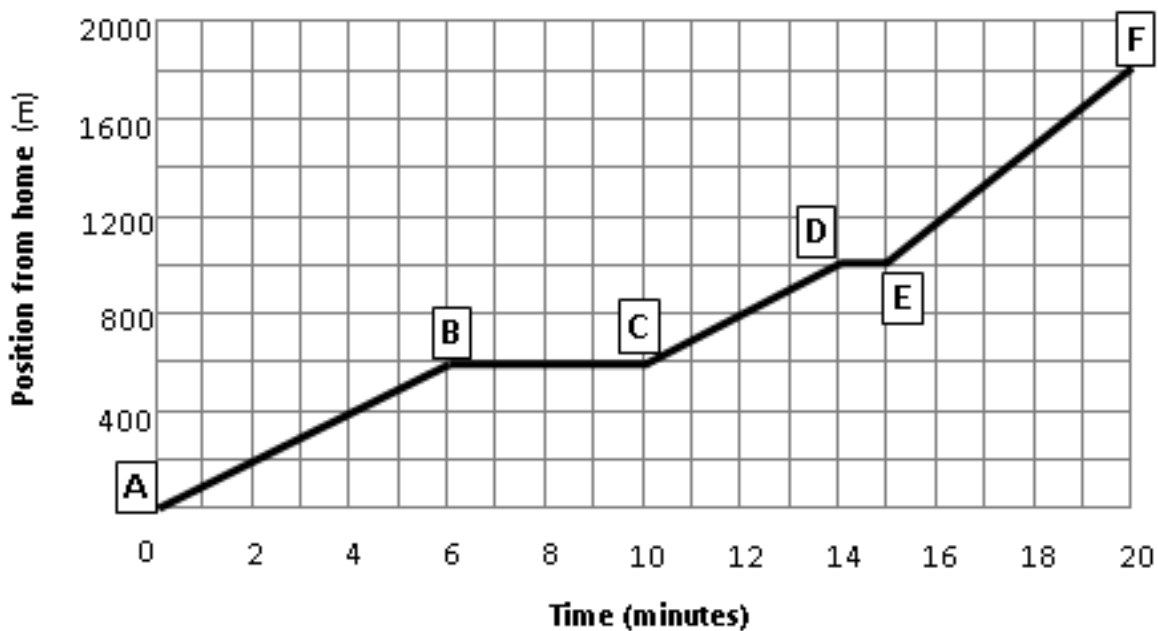
_____ is the independent variable.

_____ is the dependent variable.

To calculate speed, you need to know the distance traveled and the time it took to travel that distance:

$$\text{Speed} = \frac{\text{the change in distance}}{\text{the change in time}}$$





Heather’s Walk to School (Complete the table below based on the graph above):

Section	Distance (m)	Time (min)	Speed (m/min)	Description
A → B	$600 - 0 = 600$	$6 - 0 = 6$	$S = \frac{600}{6} = 100 \text{ m/min}$	Heather started at home and traveled 600 m in 6 minutes. She traveled away from home at a speed of 100 m/min.
B → C				
C → D				
D → E				
E → F				

1. When was Heather traveling the fastest? Can you tell this by looking at the graph?

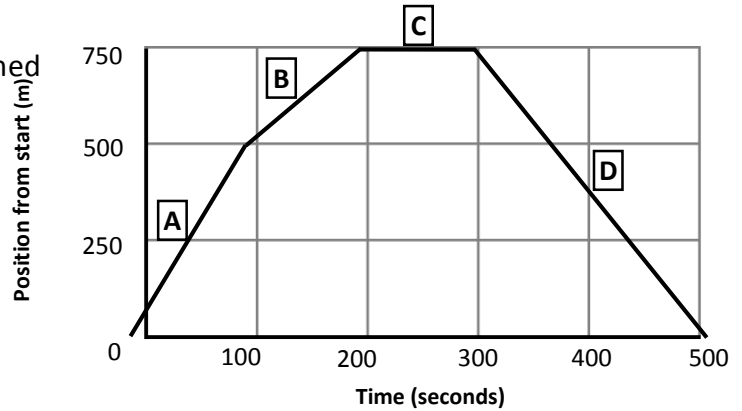
2. When was Heather’s speed 0m/min? Can you tell this by looking at the graph?

Graphs and Stories (Examples)

Examples

1. The following position-time graph depicts the motion of a jogger moving along a path.

- When was the jogger running the fastest?
- What was the farthest distance from the start reached by the jogger?
- When, if ever, did the jogger stop? For how long?
- State the distance travelled by the jogger between the following time intervals:
 - 0 to 200 s
 - 100 to 300 s
 - 300 to 500 s



e) Determine the speed travelled for each part of the joggers' journey: A, B, C, and D.

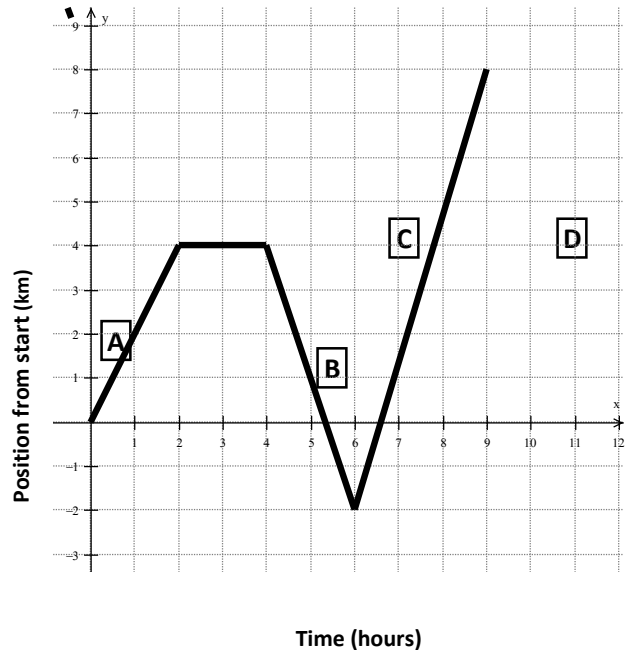
A: _____ B: _____ C: _____ D: _____

f) What is the total distance travelled by the jogger?

g) Where is the jogger at $t = 500$ s?

2. What's a realistic "story" for the graph?

- At what time does the journey start?
- What happens between $t = 2$ and $t = 4$?
- Where is the object/person at $t = 6$?
- What happens when the line crosses the x-axis?
- State the distance travelled between the following time intervals:
 - 0 to 2 h
 - 9 to 12 h
 - 4 to 6 h



f) Find the speed travelled for each part of the graph: A, B, C, and D.

A: _____ B: _____ C: _____ D: _____

g) What was the total distance travelled by the object/person?