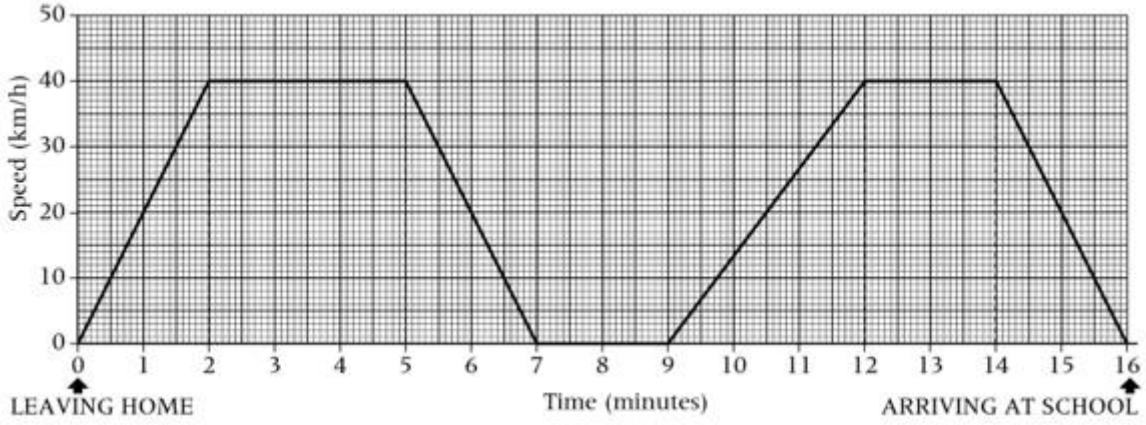
SCIENCE TEACHER.IE

Motion graphs

Speed – time graphs

Speed time graphs show how the speed of an object changes with time. If the line is horizontal then something is moving at a constant speed.

Lorraine recorded the speed of her mum's car every minute as she was driven to school. The graph below shows her results.



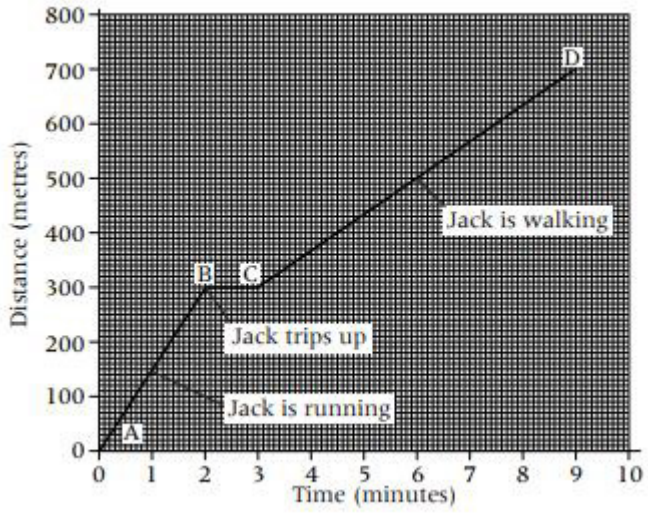
Questions

1. When did Lorraine's mum stop to collect a friend?
2. How long did she stop for?
3. For how much of the journey did the car travel at a constant speed?
4. What was the fastest speed reached by the car?
5. What was the total time for the journey to school?
6. You are going to town to meet your friends. You walk to your friend's house and wait until she is ready. Then you walk to the bus stop, but you have to run the last bit because the bus arrives. It only takes 10 minutes on the bus to town. When you get there, you look into shop windows and stop every now and again to chat to friends. When you are ready to go home there isn't another bus for another hour, so you walk instead. You walk fast because rain is forecast.

Sketch a speed – time graph to show your speed during the trip to town. Label each section and show what it represents. (**Hint:** a fast walking speed is about 5km/h)**.**

Distance Time graphs

We can show how quickly someone moves using a distance–time graph. This graph shows Jack's journey home from school. You can see from the graph that Jack begins by running, so the first part of the graph is steep. In the second part of the graph Jack has tripped up and stopped moving, so the graph is flat. After this he walks home and the graph is not as steep as when he was running.



Questions

(1) Which is:

a) the flat part of the graph?

b) the steepest part of the graph?

c) the least steep part of the graph that is not flat?

Choose your answers from: A to B, B to C, C to D.

(2) Copy and complete these sentences:

a) The steepest part of the graph is where Jack is.....

b) The flattest part of the graph is where Jack is.....

c) The least steep part of the graph is where Jack is.....

(3) **a)** Write down each section of your journey to school (for example: calling at a friend's house, walking to the bus stop).

b) Sketch a distance–time graph to show your journey. Remember that the steepness of the line shows how fast you are going. Add labels to your graph to explain what is happening at each stage.