

Name _____ Class _____

- Fill in the missing numbers in this table.

Picture	Distance travelled	Time taken	Average speed
a	20 m	2 s	
b	100 m	5 s	
c	2 m		1 m/s
d		10 s	50 m/s
e	2000 km	2 h	

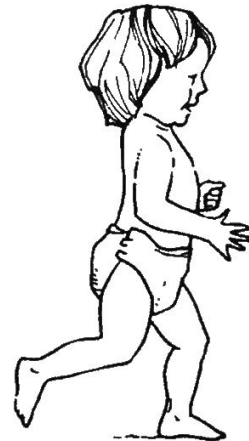
- Now match the speeds in the table above with these pictures. Which is which? Write the names in the first column of the table.



motor-car



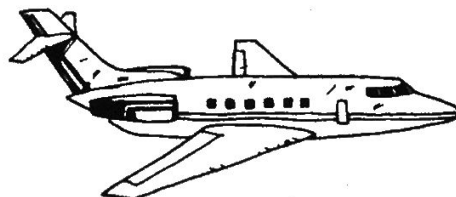
dog



baby



leopard



aeroplane

Nicola and Kelly walk home from school together. But Nicola always struggles to keep up. She complains that Kelly's legs are longer than hers, and so Kelly walks faster. Kelly says that leg length has nothing to do with it, she just walks fast.

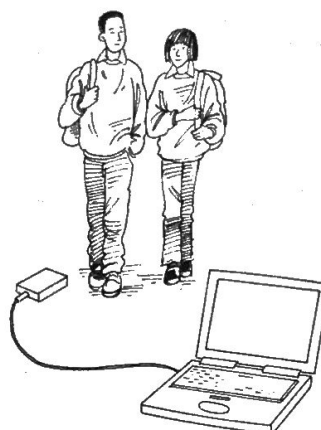
Is Nicola just a moaner or is she right?

She decided to do some research to see if her hypothesis is true: "People with long legs can always walk faster than people with shorter legs."

Nicola measured the length of 10 people's legs from the ankle to the hip-bone, using a tape-measure. Then she measured how fast they walked, using a motion sensor connected to a computer.

Each person walked 6 metres, and the readings were taken every 2 metres.

Here are Nicola's results:



Name	Leg measurement (cm)	Speed at 2 m (m/s)	Speed at 4 m (m/s)	Speed at 6 m (m/s)	Average speed (m/s)
Nicola	60	0.6	0.6	0.6	
Ryan	65	0.8	0.7	0.6	
Jack	68	0.8	0.7	0.8	
Lee-Anne	70	0.9	0.9	0.9	
Melanie	72	1.1	1.1	1.0	
Calum	74	1.1	1.2	1.1	
Luke	76	1.3	1.2	1.3	
Laura	79	1.2	1.3	1.4	
Darren	82	1.6	1.4	1.5	
Kelly	85	1.6	1.7	1.6	

(You can use a spreadsheet if you wish.)

- 1 Complete the last column of the table.
- 2 Plot a graph of: **average speed** against **leg measurement**.
- 3 Is there a pattern? What does the graph tell you about leg length and speed of walking?
- 4 Is there a difference between the walking speeds of the boys and the girls?
- 5 Is Nicola's hypothesis correct or not?
- 6 Is her investigation a fair test?
- 7 How could she improve the investigation?

Mark scheme

Q1	5 marks
Q2 (graph)	4 marks
Q3, Q4	1 mark each
Q5, Q6	2 marks each
Q7	3 marks

Maximum = 18 marks

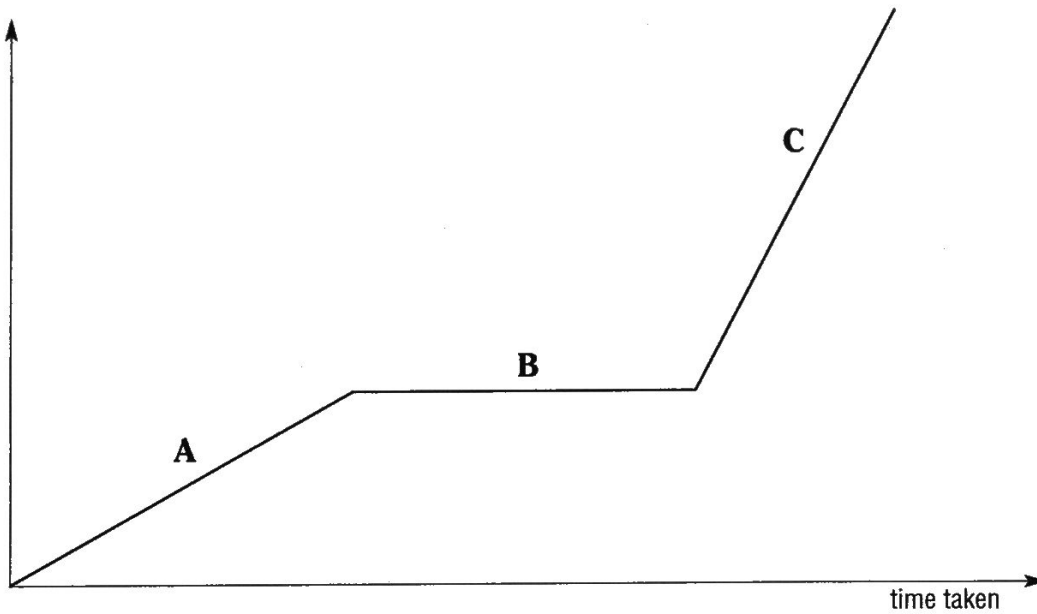
Name _____ Class _____

1 Imagine going on a bicycle ride.
The graph shows a bike journey with 3 parts.
Use words from the box to complete the sentences below the

stopped distance steeper faster speed



distance travelled by cyclist

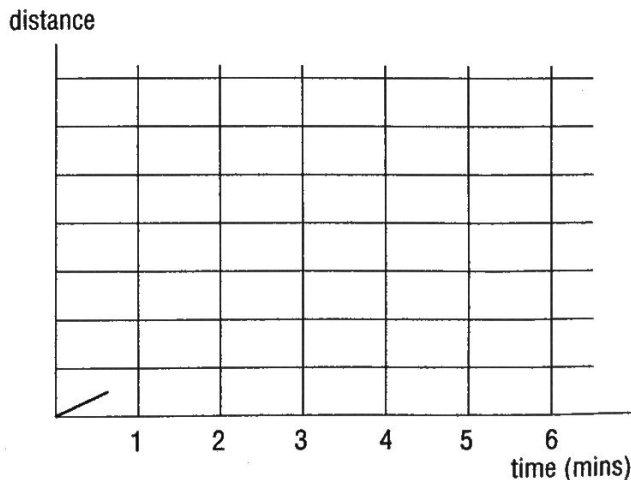


In part A of the graph, the cyclist is travelling at a steady _____.

In part B, the cyclist has _____.
She is not moving, so the _____ stays the same.

In part C, the cyclist is moving again. Because the graph is _____, it means that she is travelling _____ than before.

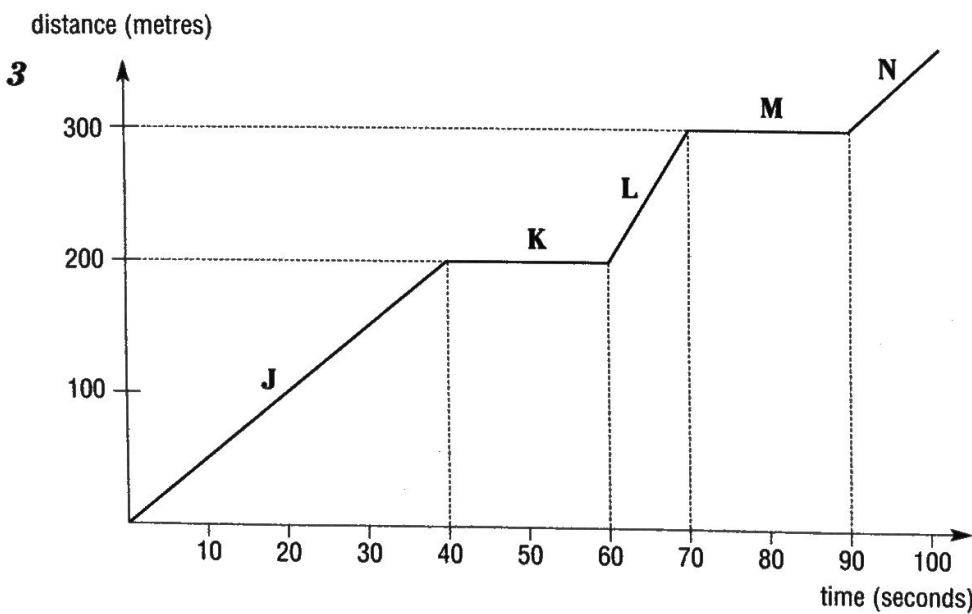
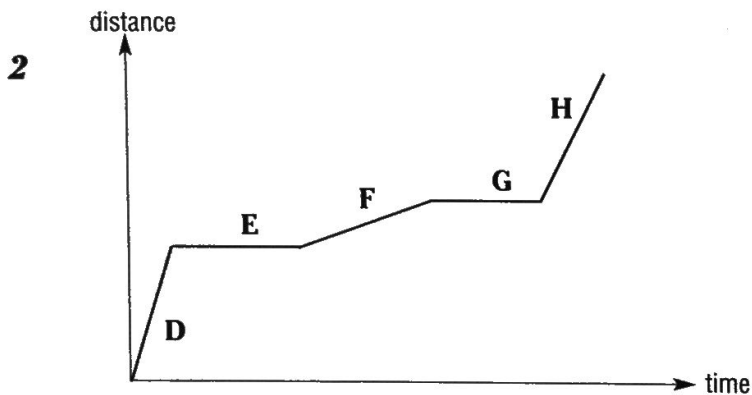
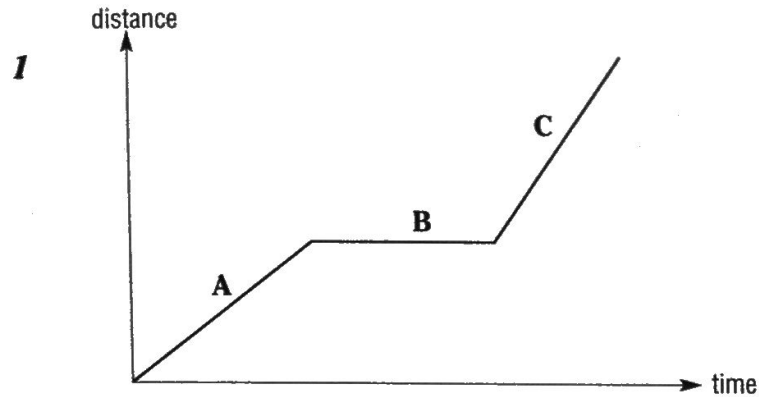
2 Calum makes a journey on his bike. Sketch a graph that shows his journey: He sets off from home, riding slowly for 1 minute. Then he stops at the traffic lights for 1 minute. He sets off again, riding at exactly the same speed as before, for 2 minutes. Then he stops for a rest for 1 minute. Finally he rides very quickly down a hill for 1 minute.



The graphs below show different journeys taken by a cyclist.

For each one, *describe the journey in words*.

Give as much detail as you can (use the letters A, B, ..., and the numbers on the axes).



4 What is the speed during section J?

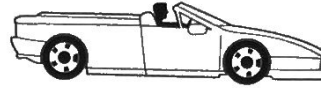
5 What is the speed during section K?

9K4

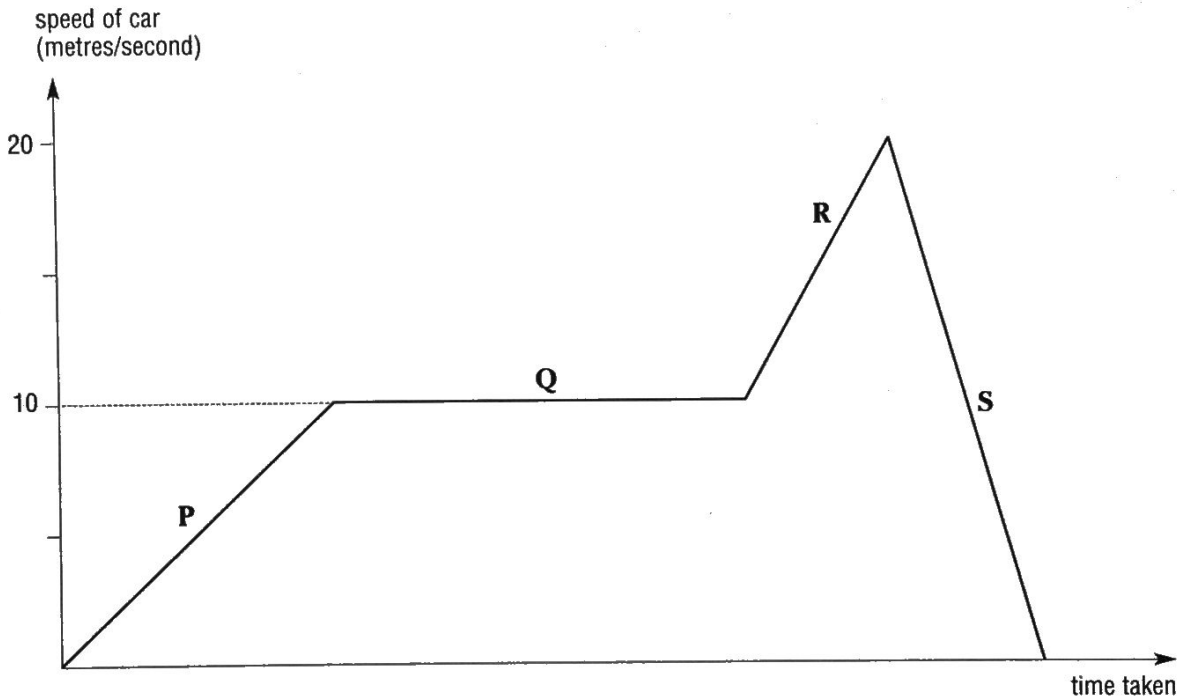
Speed – time graphs

Help Sheet

The graph shows a speed–time graph for a car journey. It has 4 parts to it. Use the words in the box to complete the sentences.



accelerates accelerating slows constant brakes



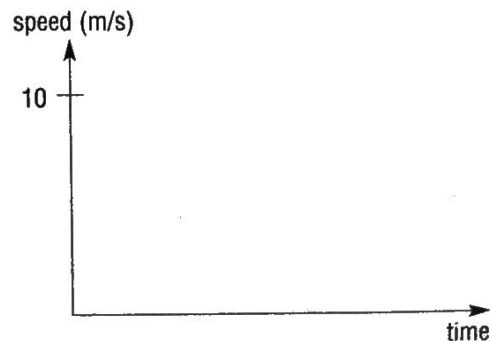
In part P, the car is speeding up. It is

In part Q, it is travelling at a speed. Its speed is ___ m/s.

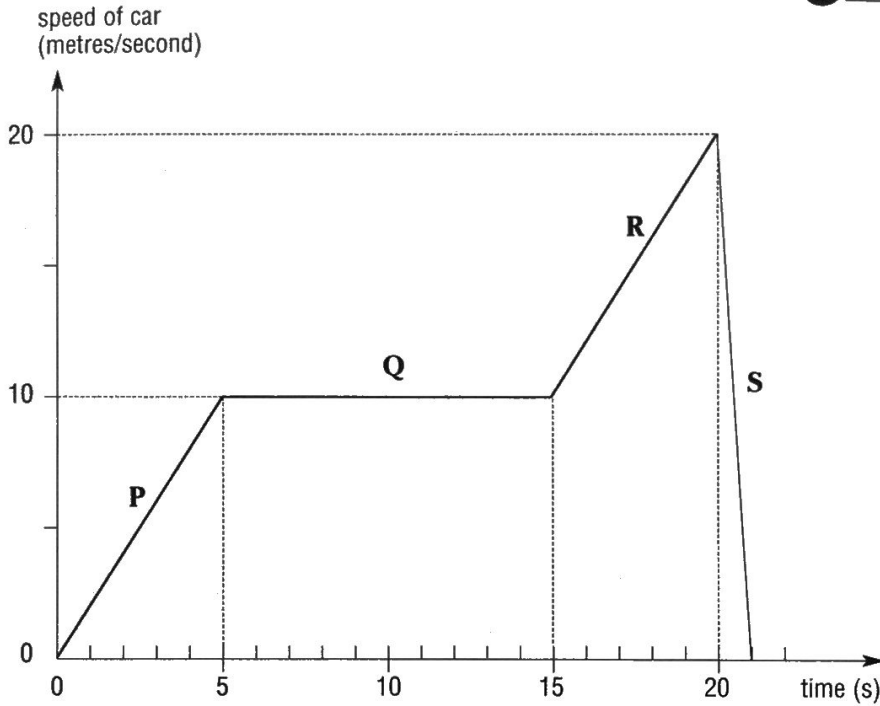
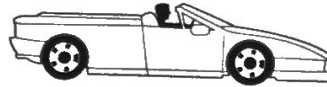
In part R, the car

In part S, the car _____ down very quickly. The driver may be using his

- f Jack starts his car, accelerates to 10 m/s, keeps at this speed for a while and then brakes quickly to a stop. Sketch the speed–time graph for his journey.

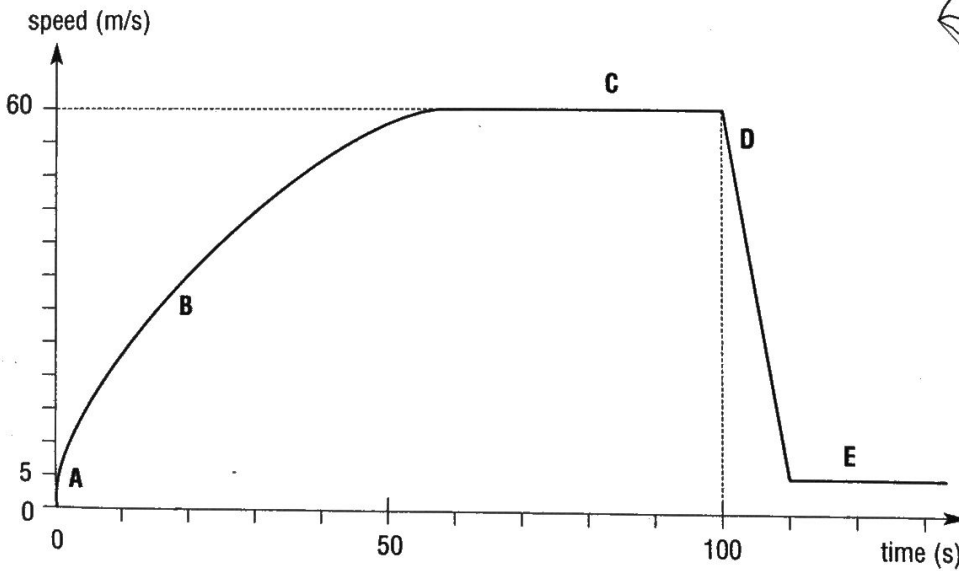


1 Here is a speed–time graph of a car journey:



Describe the journey in words, giving as much detail as you can.

2 Here is a speed–time graph for a sky-diver jumping from an aeroplane:



Describe what happens, giving as much detail as you can.

1 Think about this journey that Becky makes on her bike:

She starts off from home, travels at a steady speed for 40 seconds, by which time she has gone 200 metres.

Then she stops still for 20 seconds.

Then she sets off again, faster, travelling at a steady speed for 20 seconds and then her total distance travelled is 400 metres.

Then she rests again for 30 seconds.

Finally she travels at a steady speed for 600 m, taking 90 s.



a) On graph paper, mark and label a distance-axis from 0–1000 metres and a time-axis from 0–200 seconds.

b) Then plot a distance–time graph of Becky’s journey.

2 How far did Becky travel in total?

How long did it take her?

What was her average speed?

3 Here is a description of Jordan on his roller-blades:

He sets off at a steady speed and travels 80 metres in 40 seconds.

He stands still for 10 seconds, then sets off again at a steady speed and travels 60 m in 20 s. He falls down and sits still for 30 s, then sets off at a steady speed and travels 100 m in 20 s.

a) What is the total distance travelled?

b) What is the total time taken?

c) What is his average speed?

d) On graph paper, choose suitable scales for the axes, and draw a distance–time graph of Jordan’s journey.

