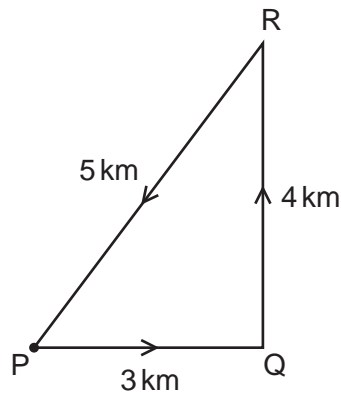


# 0654-P2-MOTION-SET-3-QP

1

A cyclist takes 15 minutes to travel along the path PQRP.



What is the average speed of the cyclist?

- A 0 km/hour    B 12 km/hour    C 20 km/hour    D 48 km/hour

2

A sky-diver jumps from a helicopter which is very high and not moving. She does not open her parachute when she first jumps.

Which row describes her acceleration and the air resistance acting on her in the first few seconds as she falls?

|   | acceleration | air resistance |
|---|--------------|----------------|
| A | constant     | constant       |
| B | constant     | increasing     |
| C | decreasing   | constant       |
| D | decreasing   | increasing     |

3

A child is standing on the platform of a station, watching the trains.

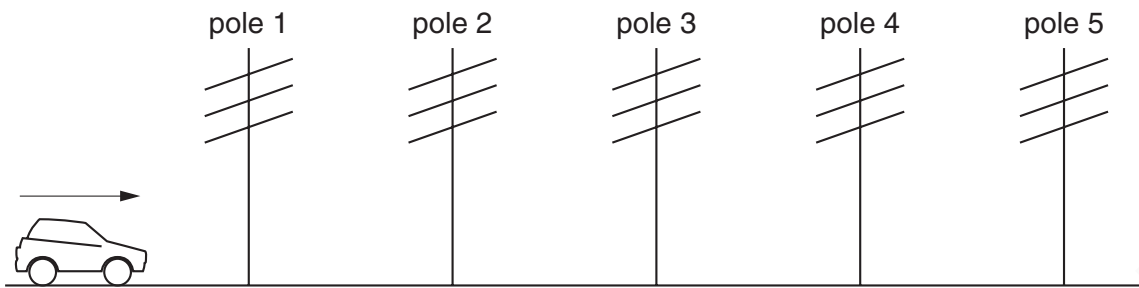


A train travelling at 30 m/s takes 3 s to pass the child.

What is the length of the train?

- A 10 m    B 30 m    C 90 m    D 270 m

**4** Five telegraph poles are positioned at equal distances along the side of a road.



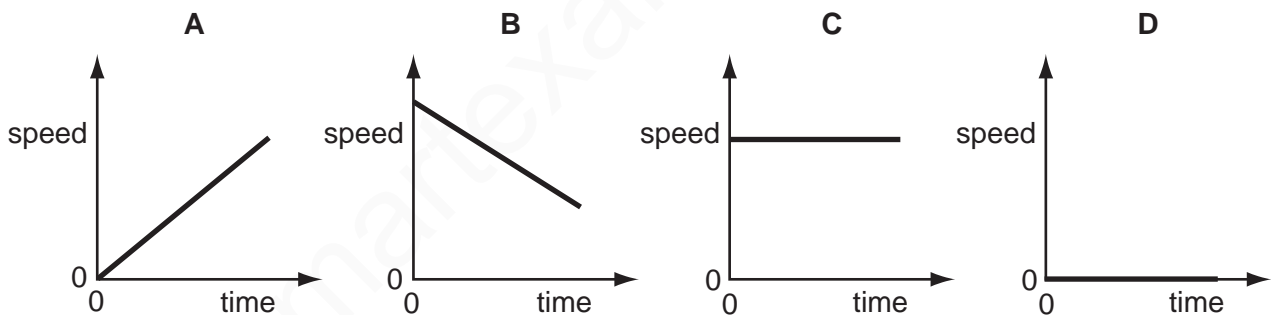
A car accelerates until it is level with pole 4. The car then continues along the road at a steady speed. The times taken to travel between one pole and the next are measured.

Which time is the greatest?

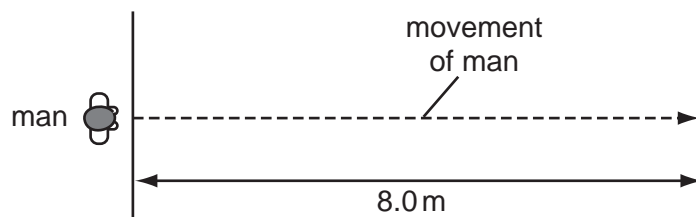
The time between

- A** pole 1 and pole 2.
- B** pole 2 and pole 3.
- C** pole 3 and pole 4.
- D** pole 4 and pole 5.

**5** Which speed / time graph applies to an object at rest?



**6** A man crosses a road 8.0 m wide at a speed of 2.0 m/s.



How long does the man take to cross the road?

- A** 4.0 s
- B** 6.0 s
- C** 10 s
- D** 16 s

**7** A sports car has a mass of 750 kg and a saloon car has a mass of 1500 kg. They are both moving at the same speed.

The sports car has

- A half the momentum of the saloon car.
- B the same momentum as the saloon car.
- C double the momentum of the saloon car.
- D four times the momentum of the saloon car.

**8** A car travels at various speeds during a short journey.

The table shows the distances travelled and the time taken during each of four stages P, Q, R and S.

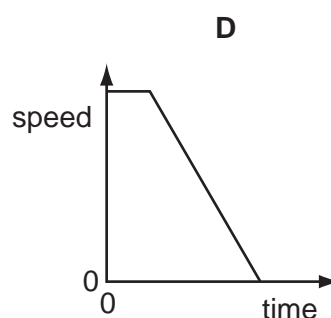
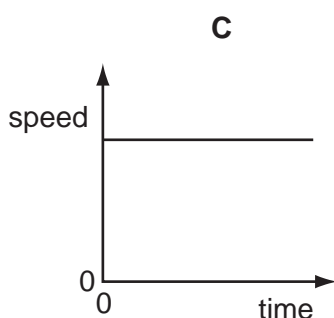
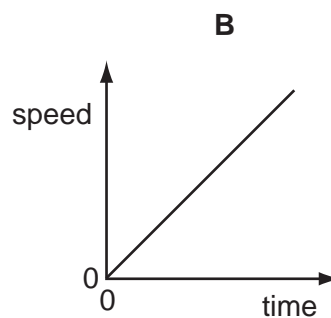
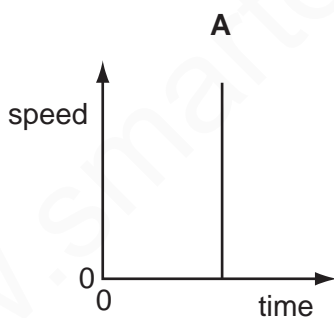
| stage                   | P   | Q   | R   | S   |
|-------------------------|-----|-----|-----|-----|
| distance travelled / km | 1.8 | 3.6 | 2.7 | 2.7 |
| time taken / minutes    | 2   | 2   | 4   | 3   |

During which two stages is the car travelling at the same speed?

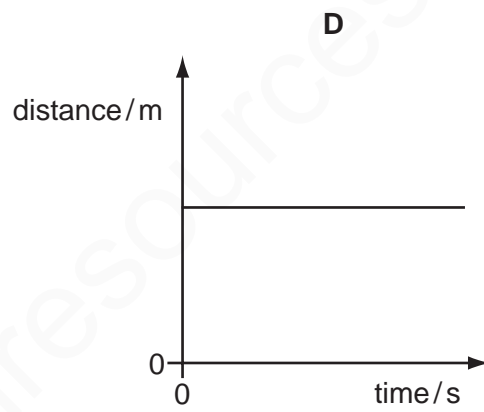
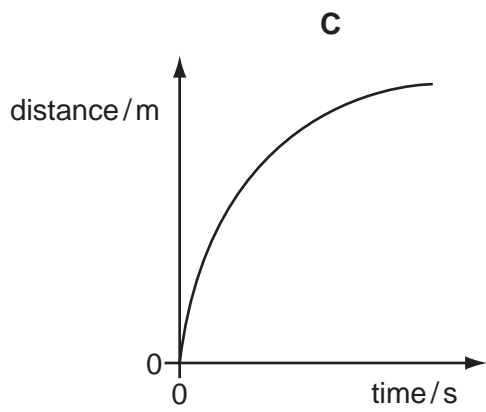
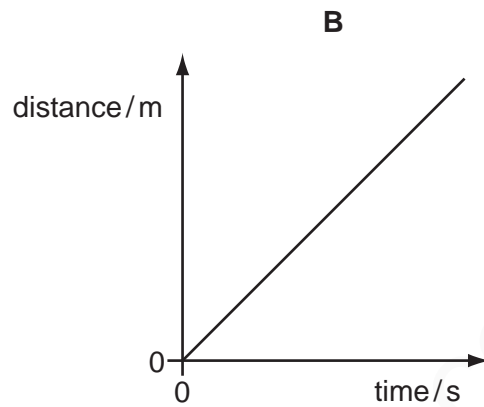
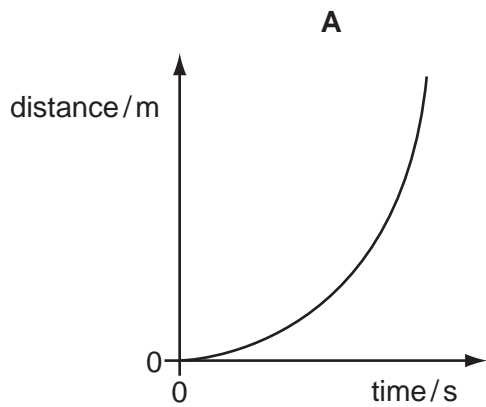
- A P and Q      B P and S      C Q and R      D R and S

**9** Four speed-time graphs are shown below.

Which graph could **not** show the motion of a car being driven normally?



**10** The following are distance/time graphs.  
Which graph shows an object travelling at constant speed?



**11** The graph shows the motion of a train during part of a journey.  
At which labelled point on the graph could the train be waiting at a station?

