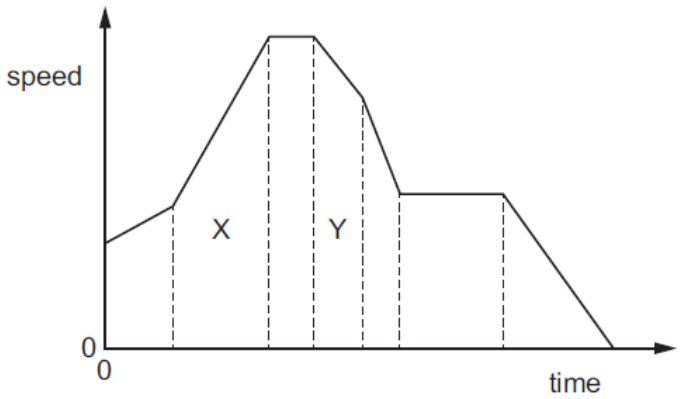
Motion – 2020 IGCSE 0625

1. Nov/2020/Paper_11/No.2

The speed–time graph represents a journey.



How does the graph show that the distance travelled in section X of the journey is greater than the distance travelled in section Y?

A The area below section X of the graph is greater than the area below section Y.

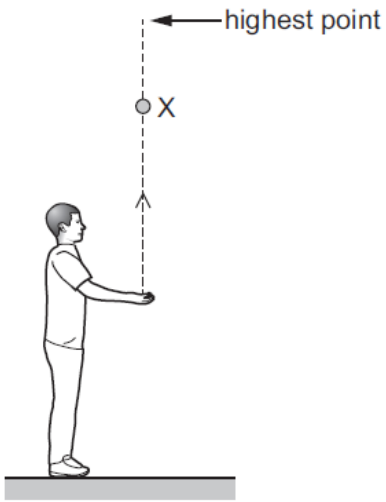
B The gradient of section X of the graph is greater than the gradient of section Y.

C The speed at the end of section X of the journey is greater than the speed at the end of section Y.

D The time for section X of the journey is greater than the time for section Y.

2. Nov/2020/Paper_11/No.3

A boy throws a ball vertically upwards with a speed *v*.



Which row describes the speed and the acceleration of the ball at point X on the way upwards?

	speed	acceleration
A	decreasing	upwards
B	decreasing	downwards
C	increasing	upwards
D	increasing	downwards

3. Nov/2020/Paper_12/No.2

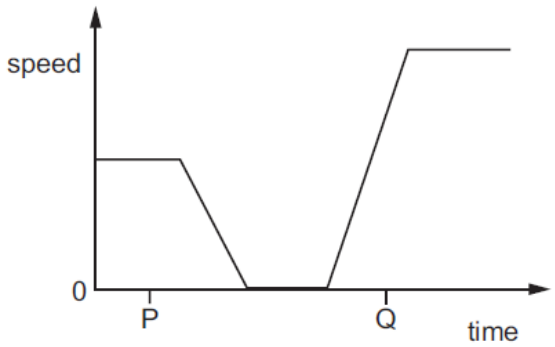
A car driver measures the time taken to complete four separate journeys.

In which journey does the driver have the greatest average speed?

	distance / km	time / h
A	60	2
B	60	3
C	120	3
D	120	4

4. Nov/2020/Paper_12/No.3

The graph shows how the speed of an object varies with time.



Which row describes the motion of the object at times P and Q?

	P	Q
A	at rest	accelerating
B	at rest	decelerating
C	moving with constant speed	accelerating
D	moving with constant speed	decelerating

5. Nov/2020/Paper_13/No.2

The diagram shows the distance–time graph for the motion of an object.

How can the motion of the object be described?

A at rest, then constant deceleration

B at rest, then constant speed

C constant speed, then constant acceleration

D constant speed, then constant deceleration

6. Nov/2020/Paper_13/No.3

An athlete runs 300 m up a hill in 100 s.

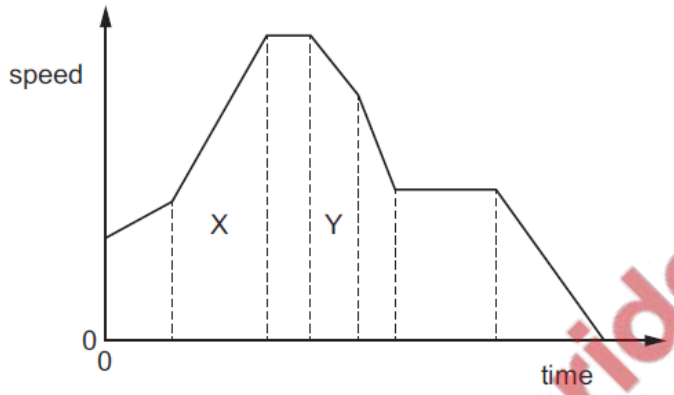
She then runs down the same hill in 50 s.

What is her average speed for the whole run?

A 2.0 m/s **B** 4.0 m/s **C** 8.0 m/s **D** 9.0 m/s

7. Nov/2020/Paper_21/No.2

The speed–time graph represents a journey.



How does the graph show that the distance travelled in section X of the journey is greater than the distance travelled in section Y?

A The area below section X of the graph is greater than the area below section Y.

B The gradient of section X of the graph is greater than the gradient of section Y.

C The speed at the end of section X of the journey is greater than the speed at the end of section Y.

D The time for section X of the journey is greater than the time for section Y.

8. Nov/2020/Paper_21/No.3

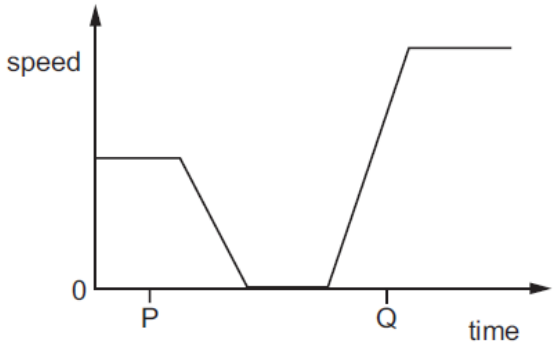
A car is travelling at a velocity of 2.0 m/s. It accelerates at a constant 0.20 m/s^2 for 2.5 minutes.

What is the final velocity of the car?

A 2.5 m/s **B** 5.2 m/s **C** 30 m/s **D** 32 m/s

9. Nov/2020/Paper_22/No.2

The graph shows how the speed of an object varies with time.



Which row describes the motion of the object at times P and Q?

	P	Q
A	at rest	accelerating
B	at rest	decelerating
C	moving with constant speed	accelerating
D	moving with constant speed	decelerating

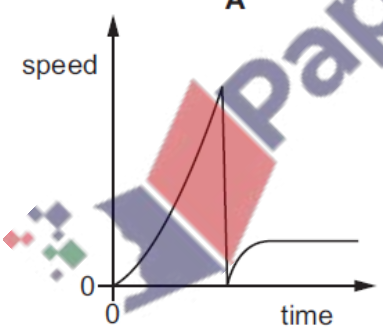
10. Nov/2020/Paper_22/No.3

A concrete block falls vertically from an aeroplane.

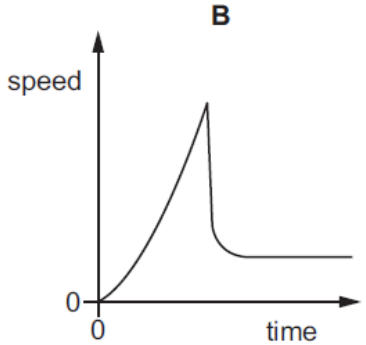
The concrete block falls into the sea and sinks.

Which graph shows the vertical motion of the concrete block?

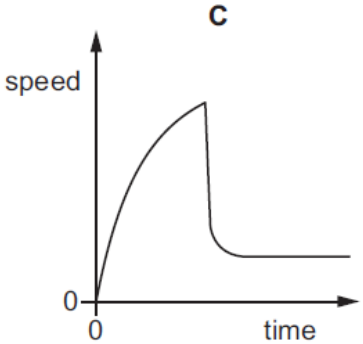
A



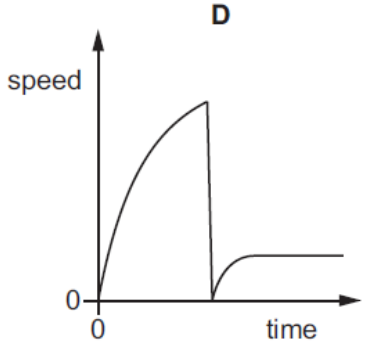
B



C



D



11. Nov/2020/Paper_23/No.2

Object P moves at a constant speed of 5 m/s repeatedly backwards and forwards in a straight line.

Object Q moves at a constant speed of 5 m/s vertically downwards.

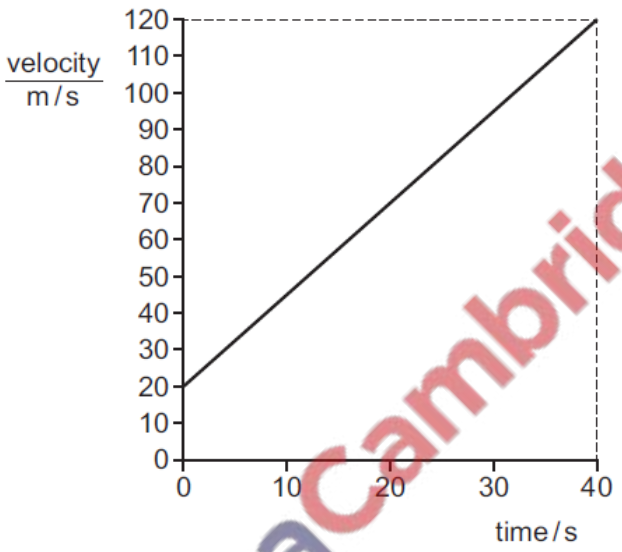
Object R moves at a constant speed of 5 m/s in a circle.

Which objects are moving with uniform velocity?

A P only **B** Q only **C** R only **D** Q and R

12. Nov/2020/Paper_23/No.3

The diagram shows a velocity–time graph for an object which is accelerating.



What is the acceleration of the object?

A 0.40 m/s^2 **B** 2.5 m/s^2 **C** 3.0 m/s^2 **D** 100 m/s^2

13. Nov/2020/Paper_43/No.1

(a) Fig. 1.1 shows a trolley travelling down a ramp.

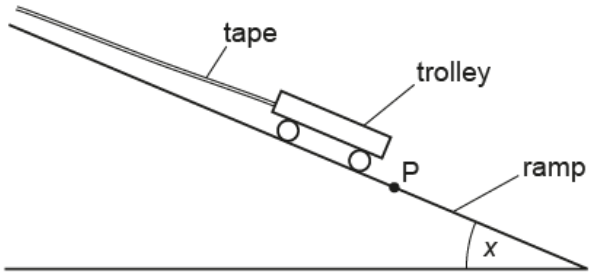


Fig. 1.1

The trolley has a piece of paper tape attached to it. The tape passes through a machine which makes a dot on the tape every 0.02 s.

Fig. 1.2 shows a section of the tape.

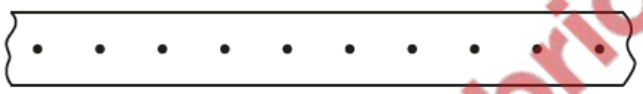


Fig. 1.2

(i) State how the dots on the tape show that the trolley was moving with constant speed.

..... [1]

(ii) When the trolley reaches the point P, the ramp is tilted so that the angle *x* is greater.

Describe and explain the change in motion of the trolley.

description .....

.....

explanation .....

.....

[2]

(b) Another trolley is released from the top of the ramp.

Fig. 1.3 shows the speed–time graph for this trolley.

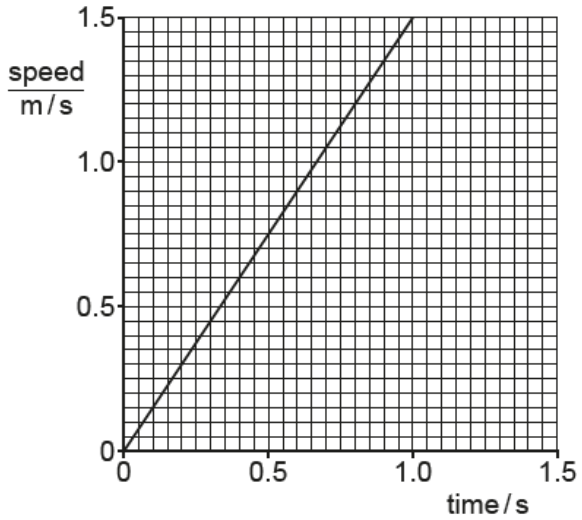


Fig. 1.3

Using Fig. 1.3, calculate the distance travelled by the trolley in the first 0.5 s.

distance = ... [2]

(c) Fig. 1.4 shows a metal ball at rest in a tube of liquid.

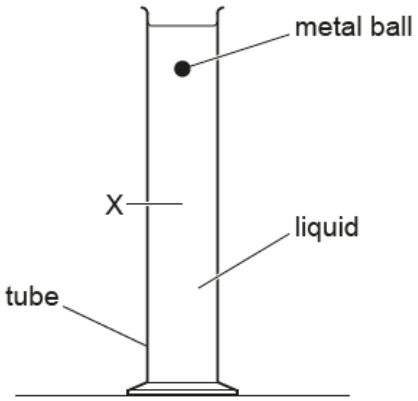


Fig. 1.4

The ball is released and reaches terminal velocity at point X.

Explain the motion of the ball as it falls from rest until it reaches point X.

Use ideas of force and acceleration in your answer.

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..... [3]

[Total: 8]