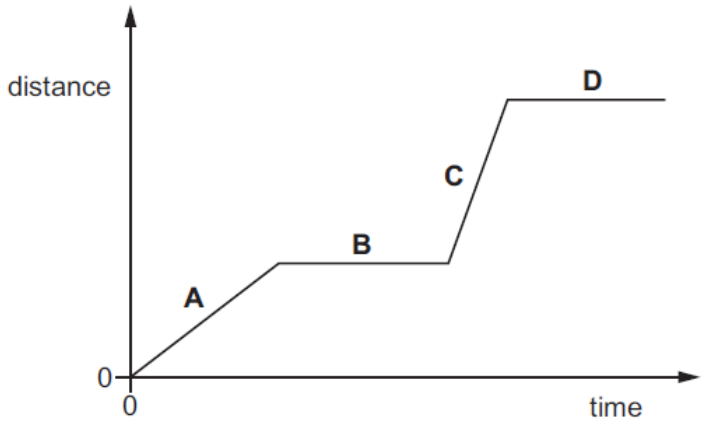
Motion – 2022 Nov O Level 5054

1. Nov/2022/Paper_11/No.4

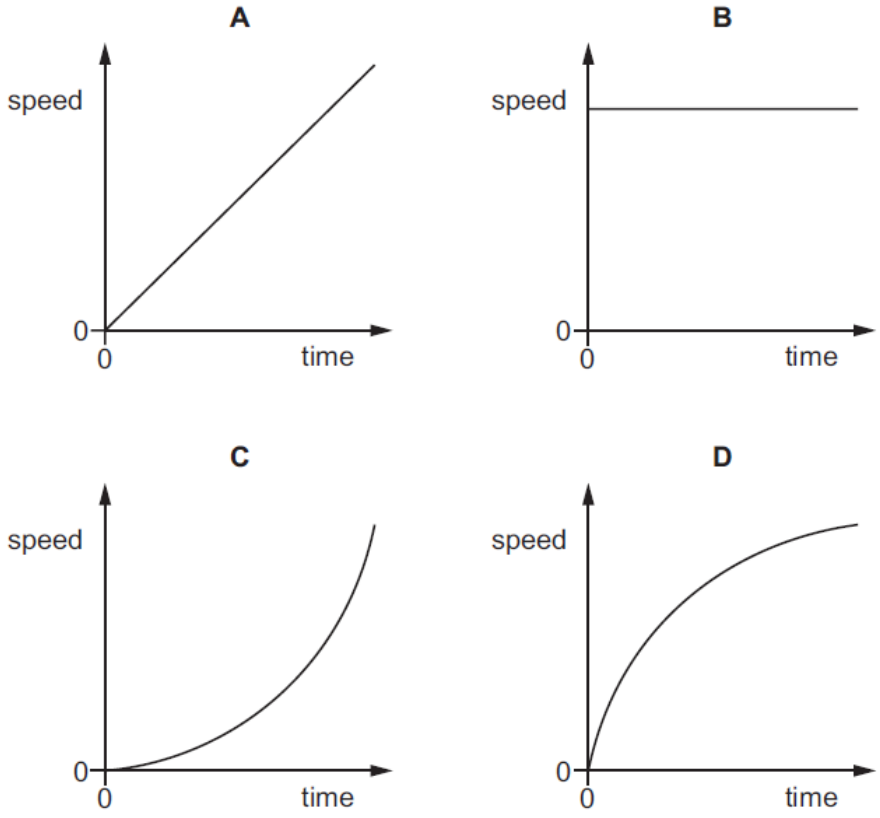
Which part of the distance–time graph shows the fastest constant speed?



2. Nov/2022/Paper_11/No.5

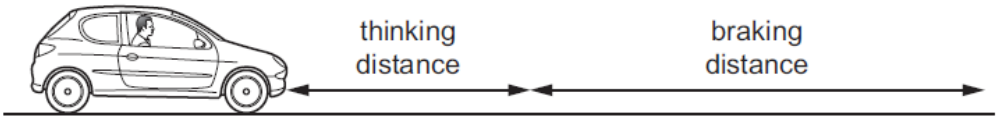
An object is accelerating along a straight, horizontal track. The acceleration is uniform.

Which speed–time graph represents the motion of the object?



3. Nov/2022/Paper_11/No.7

The diagram shows a car at the moment the driver sees a hazard ahead.



Which expression is equal to the stopping distance?

A braking distance + thinking distance

B braking distance – thinking distance

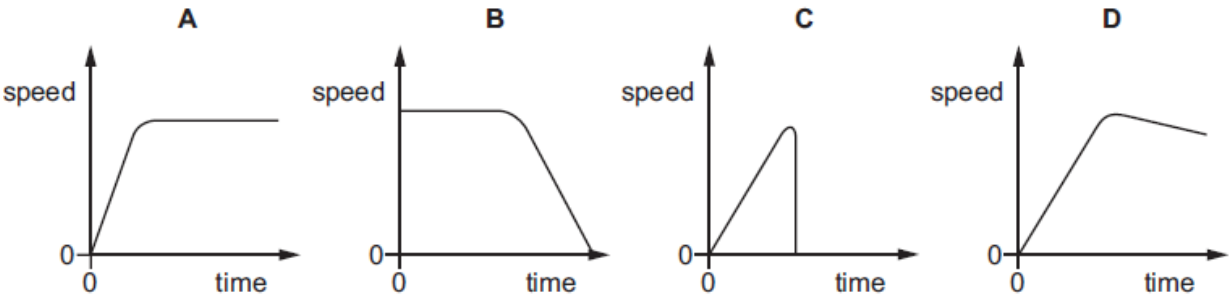
C braking distance × thinking distance

D braking distance ÷ thinking distance

4. Nov/2022/Paper_12/No.5

A ball starts from rest and rolls down a steep slope. The ball then rolls along rough horizontal ground.

Which graph shows the speed of the ball at different times?



5. Nov/2022/Paper_12/No.7

A car travels at 60 km/h on a straight road. The road is dry. The driver applies the brakes suddenly. The table shows the thinking distance, the braking distance and the stopping distance.

thinking distance /m	braking distance /m	stopping distance /m
27	22	49

The same car is driven by the same driver at 60 km/h on the same road when it is wet. The driver applies the brakes suddenly again.

What is the effect of the wet road on the thinking distance, the braking distance and the stopping distance?

	thinking distance	braking distance	stopping distance
A	no change	increases	increases
B	no change	no change	no change
C	increases	increases	increases
D	increases	no change	increases

6. Nov/2022/Paper_21/No.7(a_ b)

Fig. 7.1 shows a child sitting on a sledge on a snow-covered hill of constant slope.

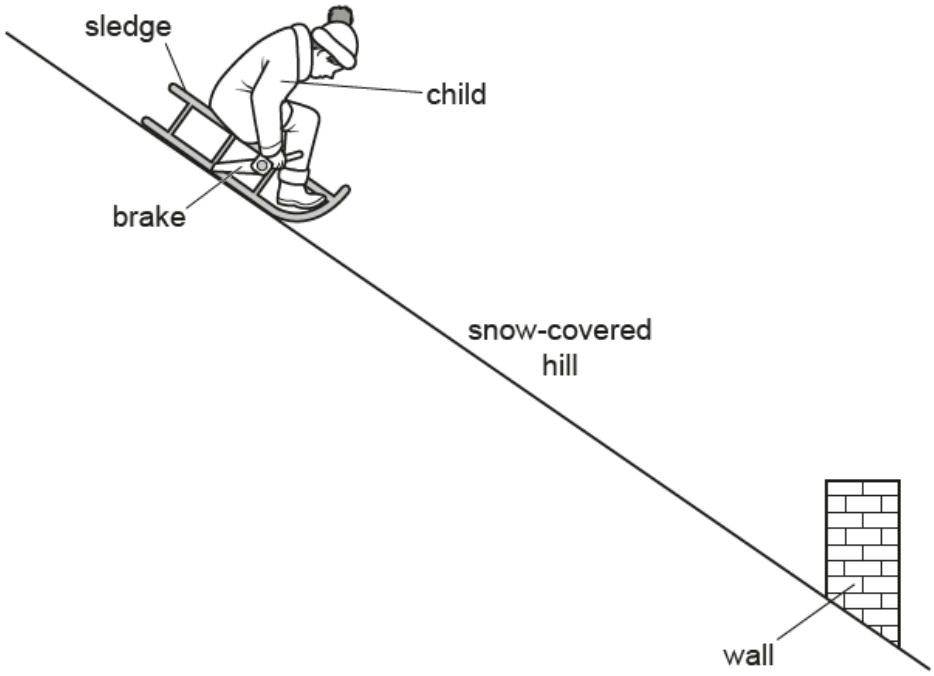


Fig. 7.1 (not to scale)

At time $t = 0$, the child and the sledge begin to move down the hill in a straight line.

When the child sees a wall ahead, he applies the brake.

The child and sledge continue to travel in a straight line until they come to a stop before hitting the wall.

Fig. 7.2 is the speed-time graph for the journey.

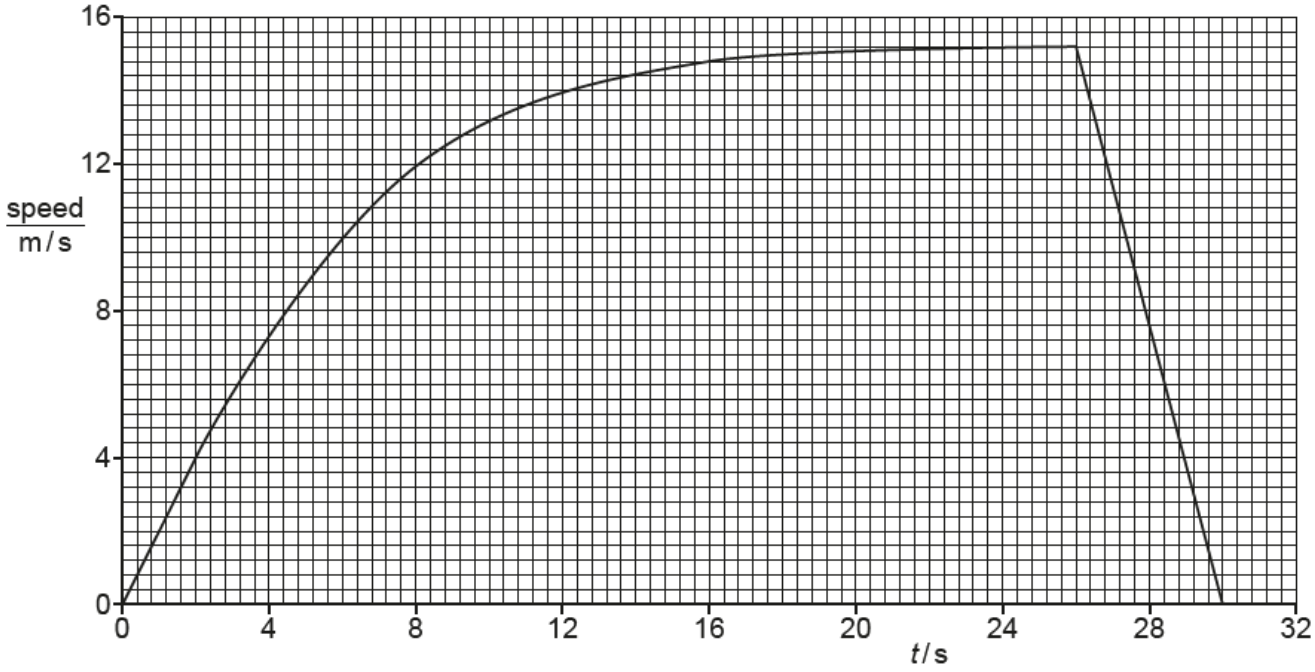


Fig. 7.2

The brake is applied at $t = 26$ s.

(a) Fig 7.2 shows how the speed of the child and sledge varies over the whole of the journey.

Explain why, between $t = 0$ and $t = 26$ s, the speed varies in the way shown by the graph.

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..... [3]

(b) At $t = 26$ s, the front of the sledge is 35 m from the wall.

Determine the distance between the front of the sledge and the wall when the sledge stops.

distance = ... [3]

7. Nov/2022/Paper_22/No.1(a)

A train travels along a straight horizontal track. At time $t = 0$, the train passes through station P at constant speed without stopping.

The driver applies the brakes 70 s before reaching station Q. The train decelerates.

Fig. 1.1 is the speed–time graph for the train from $t = 0$ until it stops at station Q.

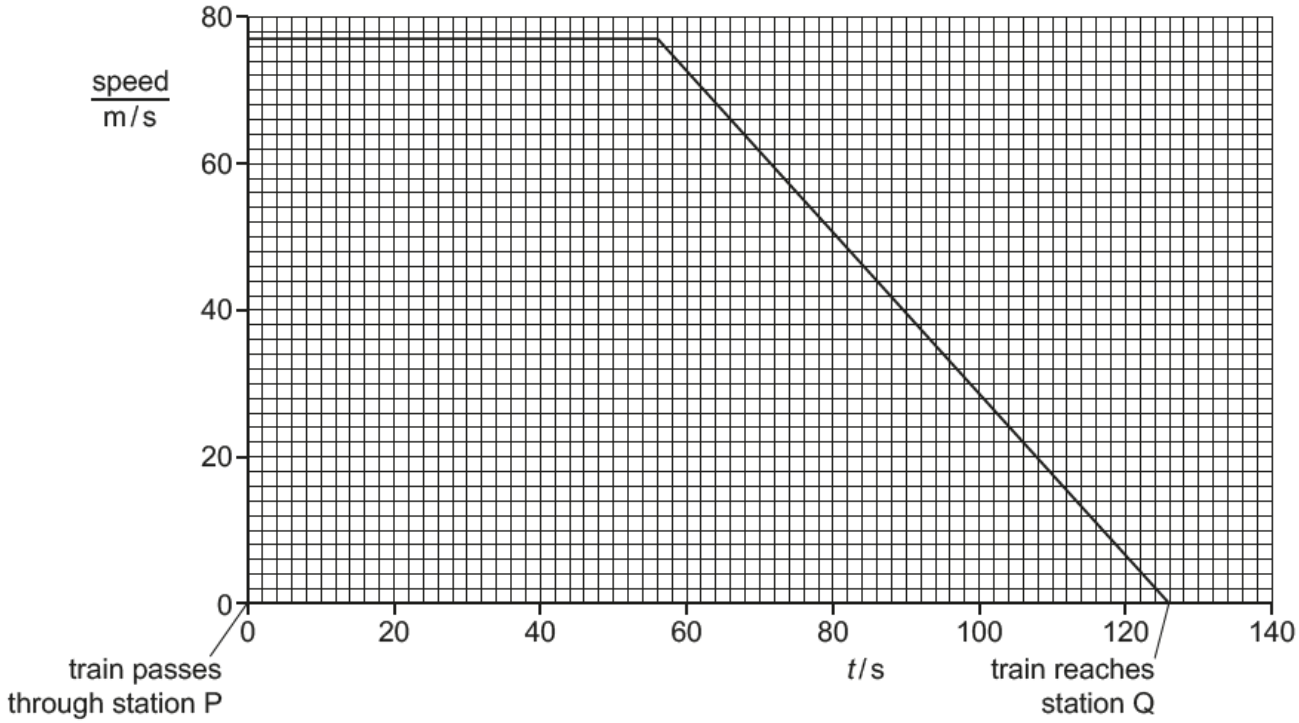

Fig. 1.1

(a) Using Fig. 1.1, determine the distance between station P and station Q.

distance = ... [3]