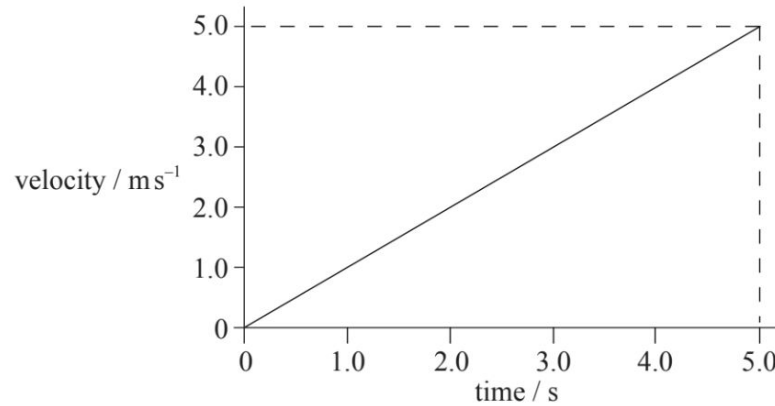


# 1-D Motion Paper One Problems

M12 sl tz1

1.

3. The velocity–time graph for an accelerating object that is travelling in a straight line is shown below.



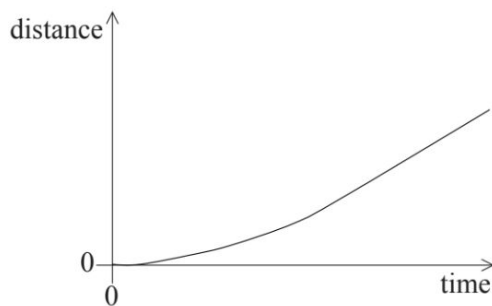
Which of the following is the change in displacement of the object in the first 5.0 seconds?

- A. 25.0 m
- B. 12.5 m
- C. 5.0 m
- D. 1.0 m

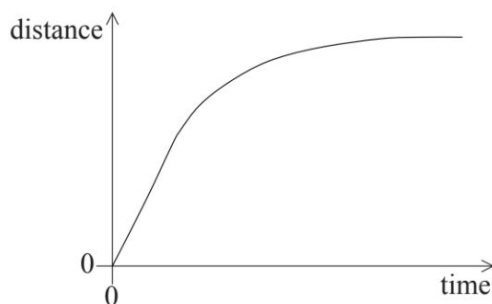
2.

4. An object falls vertically from rest. Air resistance acts on the object and it reaches a terminal speed. Which of the following is the distance–time graph for its motion?

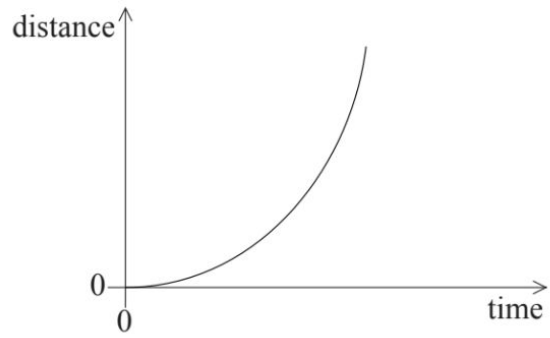
A.



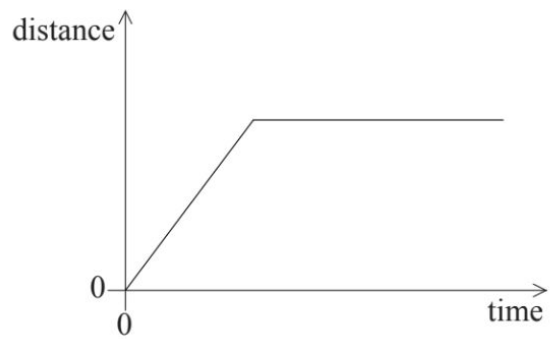
B.



C.



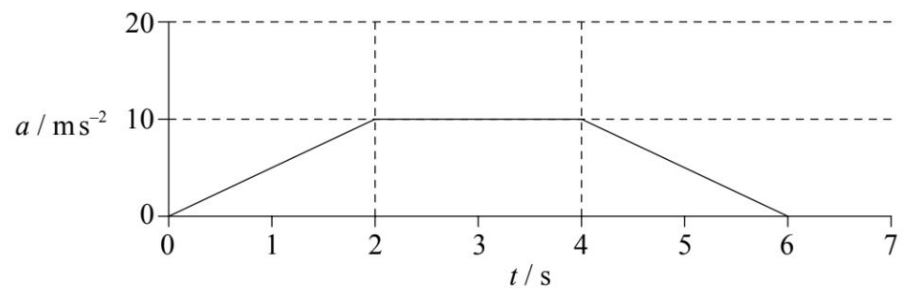
D.



M12 sl tz2

3.

3. The graph shows the acceleration  $a$  of an object as time  $t$  varies.



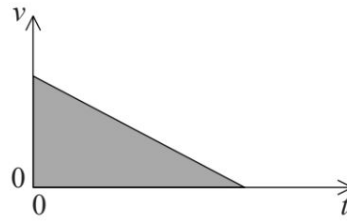
What is the magnitude of the change in the velocity of the object between 0 and 3 seconds?

- A.  $5 \text{ ms}^{-1}$
- B.  $10 \text{ ms}^{-1}$
- C.  $20 \text{ ms}^{-1}$
- D.  $30 \text{ ms}^{-1}$

M13 sl tz1

4.

3. The graph below shows how velocity  $v$  varies with time  $t$  for a ball thrown vertically upwards from the Earth's surface.



The shaded area is equal to the

- A. displacement.
  - B. final velocity.
  - C. change in velocity.
  - D. acceleration.
- 5.
4. Two identical balls are dropped from a tall building, one a few seconds after the other. Air resistance is **not** negligible. As the balls fall, the distance between the balls will
- A. decrease.
  - B. increase.
  - C. increase then remain constant.
  - D. remain constant.

M13 sl tz2

6.

3. An object, initially at rest, travels a distance  $d$  in a time  $t$  at a constant acceleration. What is the time taken for the object to travel  $16d$  from rest at the same acceleration?
- A.  $16t$
  - B.  $8t$
  - C.  $4t$
  - D.  $2t$

7.

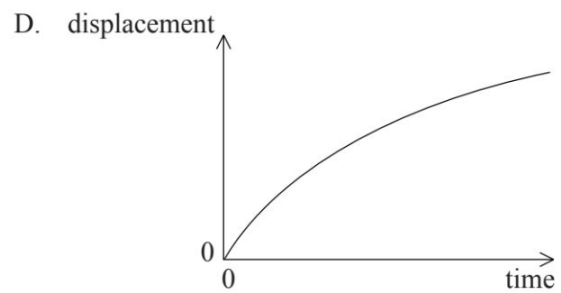
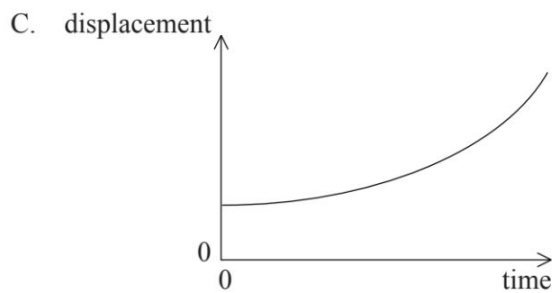
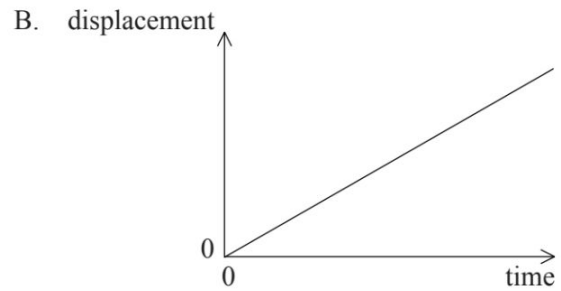
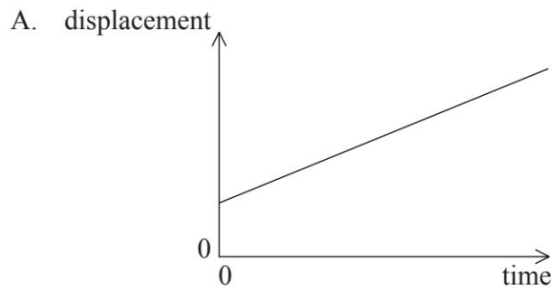
4. An object is released above the surface of Earth. Which of the following correctly describes the speed and acceleration before it reaches terminal speed?

	Speed	Acceleration
A.	increases	remains constant
B.	increases	decreases
C.	remains constant	remains constant
D.	remains constant	decreases

M14 sl yz1

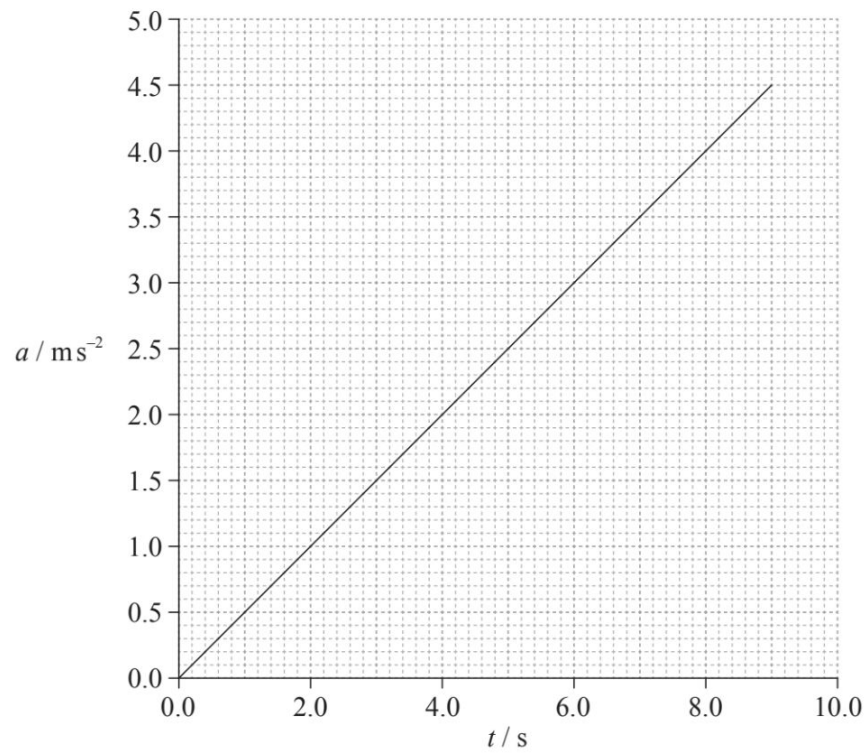
8.

3. A body moves on a straight line. The graphs show the variation of displacement with time. Which graph shows motion with negative acceleration?



9.

3. A particle accelerates from rest. The graph shows how the acceleration  $a$  of the particle varies with time  $t$ .

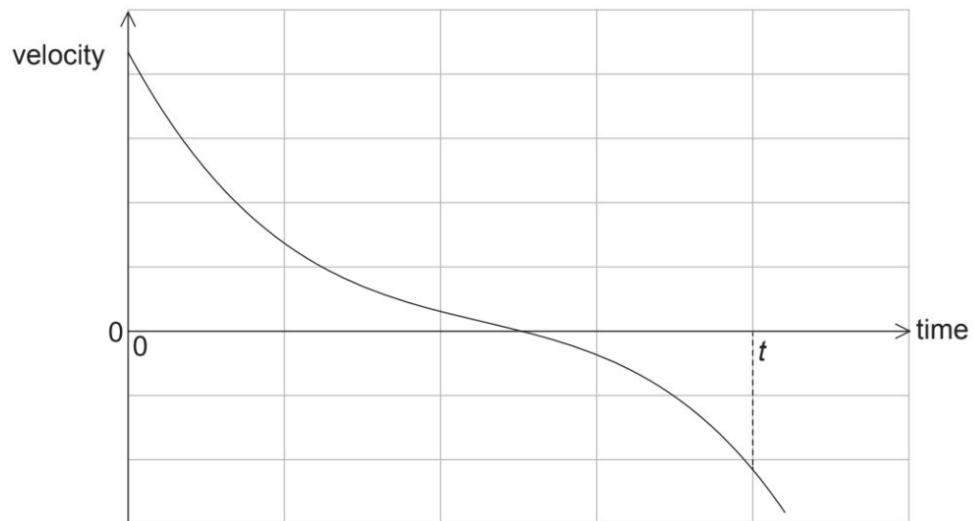


What is the speed of the particle at  $t = 6.0 \text{ s}$ ?

- A.  $0.5 \text{ ms}^{-1}$
- B.  $2.0 \text{ ms}^{-1}$
- C.  $9.0 \text{ ms}^{-1}$
- D.  $18 \text{ ms}^{-1}$

10.

4. The graph shows the variation with time of the velocity of a truck of fixed mass.



What can be deduced from the graph?

- A. The truck is always accelerating.
- B. The truck is always moving.
- C. The truck is always moving in one direction.
- D. The displacement of the truck after time  $t$  is zero.

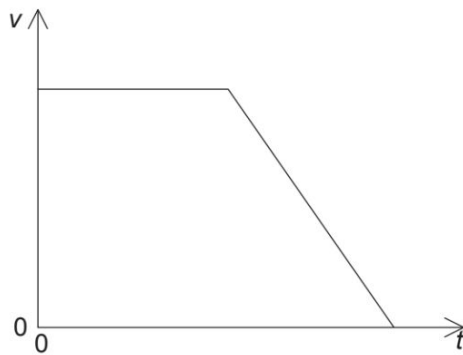
11.

3. A tennis ball is released from rest and falls vertically through a small distance in air. What is the change in the speed of the ball and the change in the acceleration of the ball as it falls?

	<b>Speed of the ball</b>	<b>Acceleration of the ball</b>
A.	increases	decreases
B.	decreases	increases
C.	increases	increases
D.	decreases	decreases

12.

4. The graph below shows the variation with time  $t$  of the velocity  $v$  of a car travelling in a straight line.



Which graph shows the variation with  $t$  of the displacement  $s$  of the car?

Which graph shows the variation with  $t$  of the displacement  $s$  of the car?

