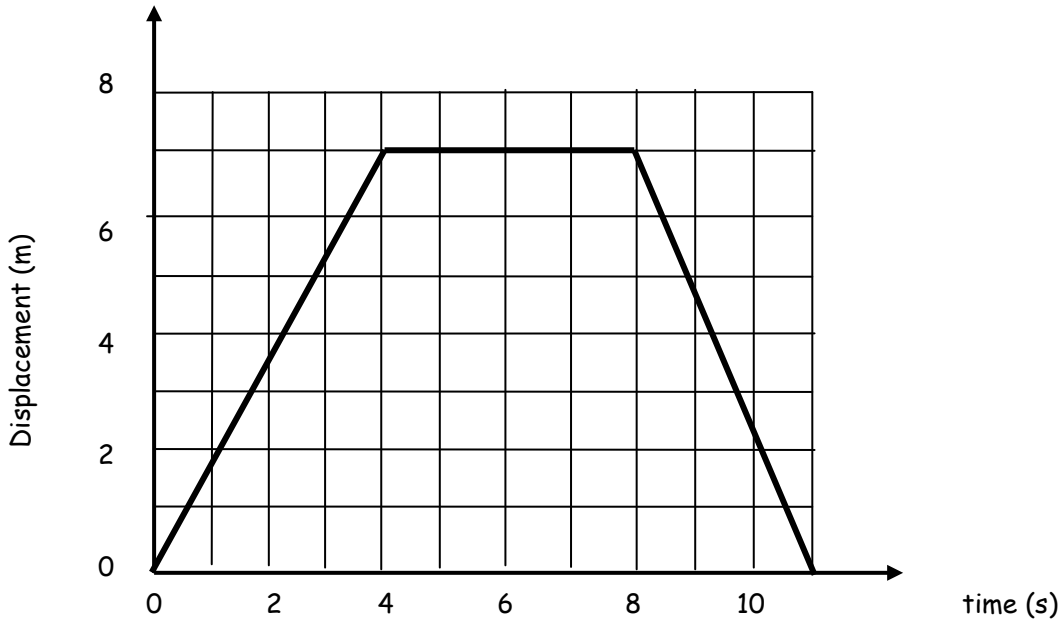
# STRAIGHT LINE MOTION TEST Name:_____

1. The number of significant figures in the number 0.0230 is
   **a)** 2 **b)** 3 **c)** 4 **d)** 5

2. The number 35.45 rounded to 2 significant figures is
   **a)** 35.0 **b)** 35 **c)** 35.5 **d)** 40

3. Five different students measured the mass of the same rock. Their measurements were: 195 gm, 201 gm, 200 gm, 196 gm and 198 gm. The mass of the rock is best written as
   **a)** 198 $\pm$ 1 gm **b)** 198 $\pm$ 2 gm **c)** 198 $\pm$ 3 gm **d)** 198 $\pm$ 4 gm

The following displacement/time graph refers to questions 4 to 6. The graph describes the displacement of an object over an 11 second time interval. The object is initially at rest and travels along a straight path.

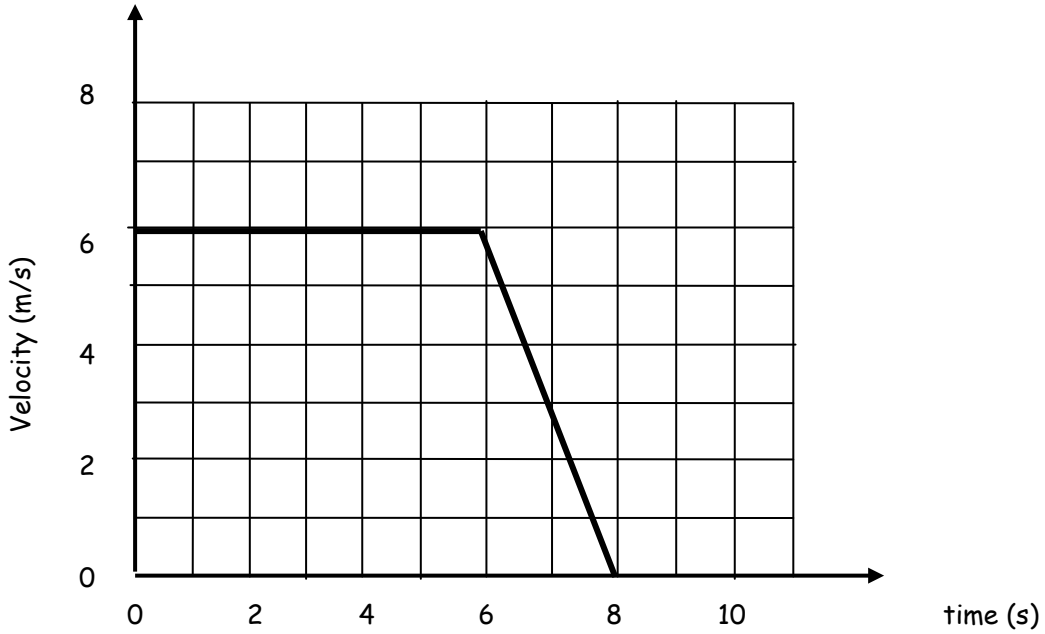



4. The velocity after 2 secs. is
   **a)** 1.3 m/s **b)** 1.8 m/s **c)** 3.5 m/s **d)** 14 m/s

5. After 11 secs. the net displacement and the total distance travelled are respectively
   **a)** 0 m and 14 m **b)** 14 m and 14 m **c)** 0 m and 7 m **d)** 14 m and 0 m.

6. The object is stationary at time
   **a)** 1 s **b)** 2 s **c)** 5 s **d)** 9 s

The following velocity time graph refers to questions 7 to 10. The graph describes the motion of an object over an 11 second time interval.




7. The velocity of the object at 2 seconds is
   **a)** 6 m/s **b)** 3 m/s **c)** 0 m/s **d)** 12 m/s

8. The net displacement at 6 seconds is
   **a)** 1 m **b)** 12 m **c)** 0 m **d)** 36 m

9. The average acceleration from 6 to 8 seconds is
   **a)** +3 $m/s^2$ **b)** -3 $m/s^2$ **c)** +0.33 $m/s^2$ **d)** -0.33 $m/s^2$

10. The object is stationary at time
    **a)** 0 secs **b)** 2 secs **c)** 7 secs **d)** 8 secs

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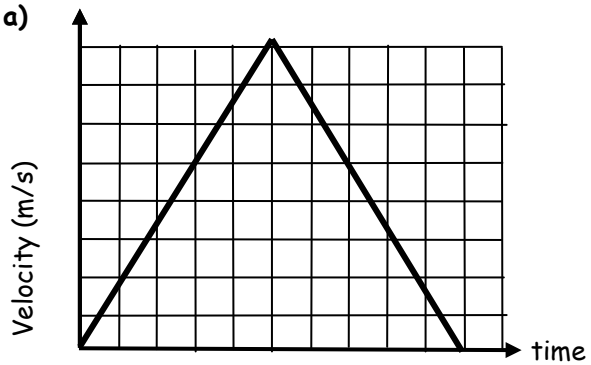
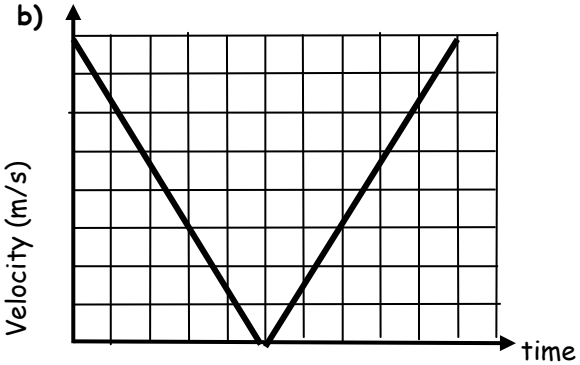
11. An object is thrown vertically upwards. Which of the following graphs represents the motion of the object?

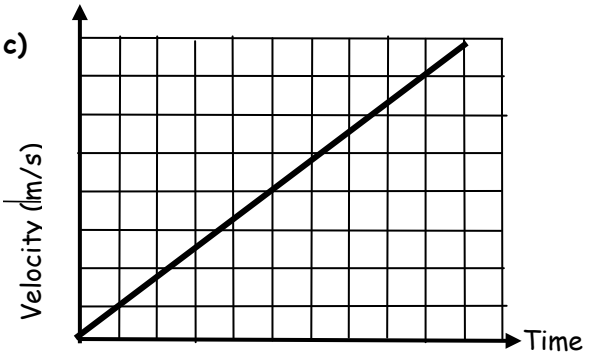
**a)**



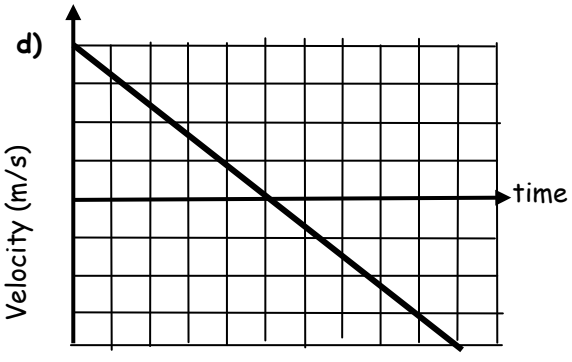

**b)**




**c)**

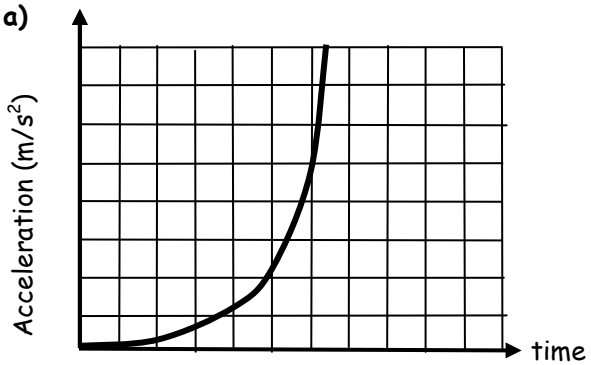



**d)**

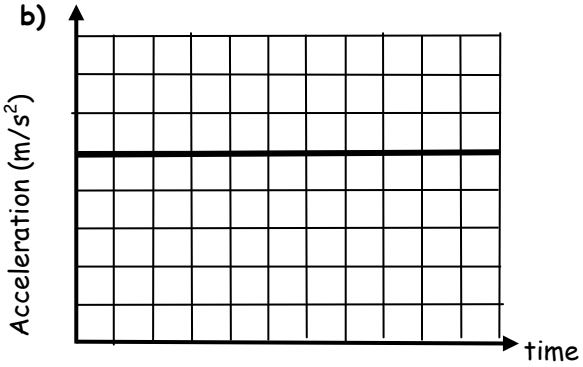


12. An object is thrown vertically upwards. Which of the following graphs represents the magnitude of the acceleration?

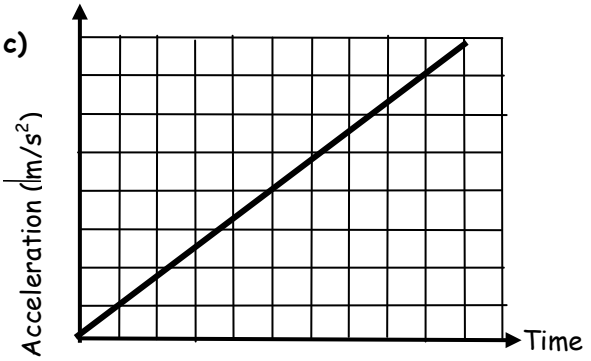
**a)**



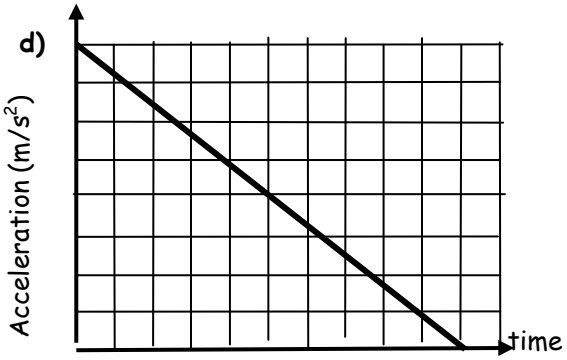

**b)**




**c)**




**d)**

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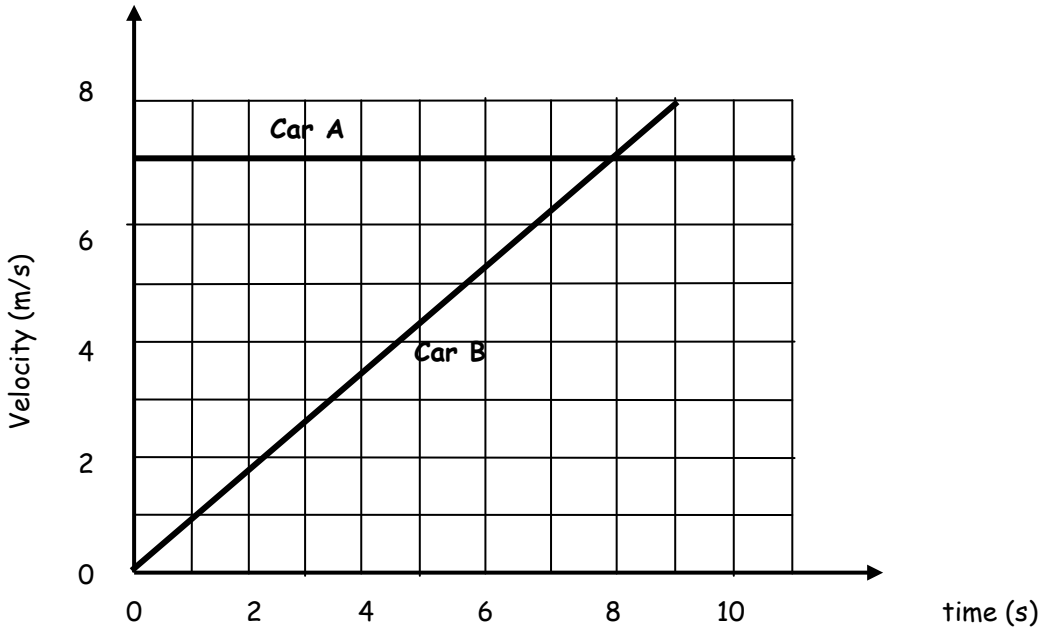
The motion of two cars is shown in the following graph. Both cars are moving in the same straight line.




13. At time t = 0 secs. both cars are side by side. At time t = 8 secs.
    - **a)** Car A and Car B have the same acceleration
    - **b)** Car A and Car B have the same displacement
    - **c)** Car A and Car B have the same velocity
    - **d)** Car A and Car B are side by side.

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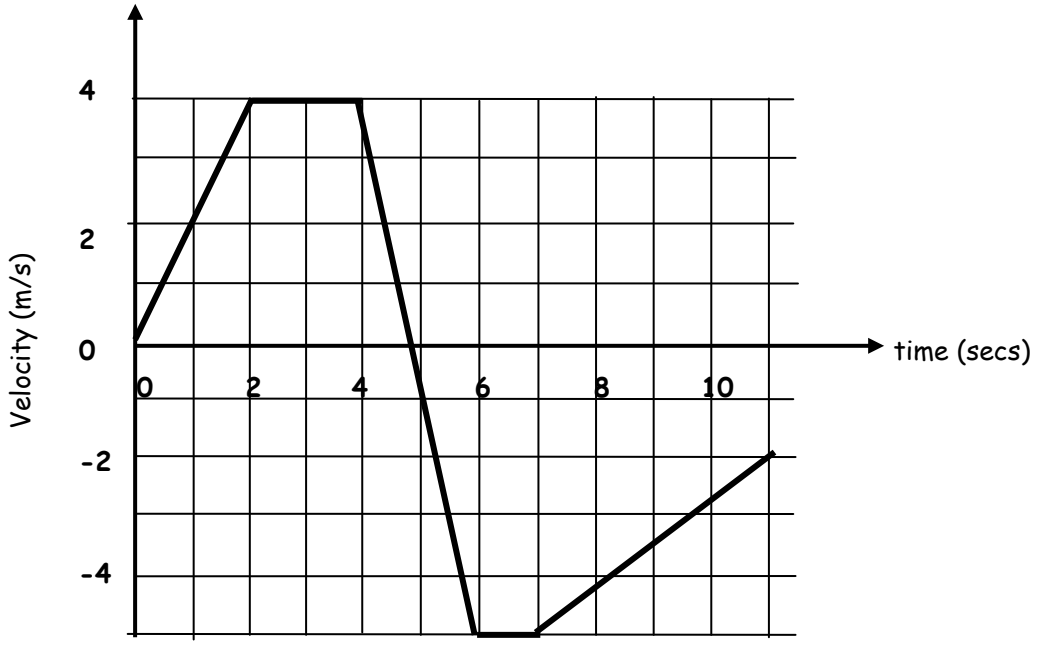
The following velocity time graph refers to questions 14 to 17. The graph describes the motion of an object over an 11 second interval. The object moves in a straight line.




14. The maximum velocity of the object is
**a)** 2 m/s **b)** 4 m/s **c)** -5 m/s **d)** -6 m/s

15. The net displacement occurring from time t = 2 secs to t = 4 secs is
**a)** 2 m **b)** 4 m **c)** 6 m **d)** 8 m

16. The magnitude of the maximum acceleration of the object is
**a)** 4.5 $m/s^2$ **b)** 5 $m/s^2$ **c)** 9.0 $m/s^2$ **d)** 11.0 $m/s^2$

17. The maximum displacement of the object occurs at time t =
**a)** 4 s **b)** 4.9 s **c)** 7.0 s **d)** 11 s

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A stone dropped from rest down a mine shaft takes 3 seconds to reach the bottom. Neglect air resistance when determining the answers to questions 20 & 21.

18. What is the depth of the mine shaft?
**a)** 90 m **b)** 45 m **c)** 30 m **d)** 15 m

19. What is the magnitude of the velocity of the stone at the instant before striking the bottom?
**a)** 90 m/s **b)** 45 m/s **c)** 30 m/s **d)** 15 m/s

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Use the following information to answer questions 20 & 21. An object slows down at a uniform rate from 30 m/s to 10 m/s in 5.0 seconds.

20. What is the acceleration of the object?
**a)** -8 $m/s^2$ **b)** -6 $m/s^2$ **c)** -4 $m/s^2$ **d)** -2 $m/s^2$

21. How far did the object travel during the 5 seconds?
**a)** 200 m **b)** 125 m **c)** 100 m **d)** 50 m

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22. A ball is dropped on to a floor so that it strikes the floor at a speed of 15 m/s and rebounds at a speed of 12 m/s. The change in velocity is

**a)** 27 m/s down **b)** 27 m/s up **c)** 3 m/s down **d)** 3 m/s up

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23. How many metres per second is 110 km/hr?

**a)** 3960 m/s **b)** 3.96 m/s **c)** 30.6 m/s **d)** 3.06 m/s

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Use the following information to answer questions 26 to 30. A ball is thrown vertically upwards, so that it reaches a maximum height of 19.6 m. It is caught at the same point that it was thrown from.
Use $g = 9.8\ m/s^2$ down.

24. The initial upward velocity of the ball was

**a)** 39.2 m/s **b)** 19.6 m/s **c)** 9.8 m/s **d)** 4.9 m/s

25. The time it takes to reach the maximum height is

**a)** 1.0 s **b)** 2.0 s **c)** 3.0 s **d)** 4.0 s

26. The total time of flight was

**a)** 2.0 s **b)** 4.0 s **c)** 6.0 s **d)** 8.0 s

27. The velocity of the ball when it was caught (at the same point of projection) was

**a)** 39.2 m/s **b)** 19.6 m/s **c)** 9.8 m/s **d)** 4.9 m/s

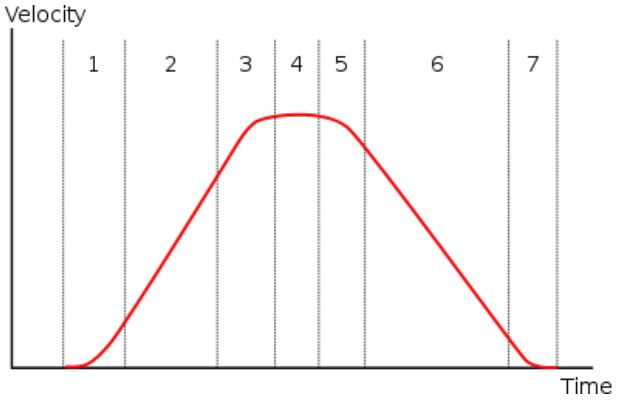
28. At the top of the flight, the acceleration of the ball was

**a)** $9.8\ m/s^2$ up **b)** $9.8\ m/s^2$ down **c)** $0\ m/s^2$ **d)** impossible to determine

29. Jerk (or Jolt) is the rate of change of acceleration with respect to time. What is the appropriate unit?

**a)** m **b)** $ms^{-1}$ **c)** $ms^{-2}$ **d)** $ms^{-3}$

30. Here is a graph of Velocity against time. On these axes, draw a graph of the Jerk over the same time period. You may need to extend one or more of the axes.




**THE END**

# Answer Sheet

**Name:**

| Question | Answer |
|---|---|
| 1 | |
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| Question | Answer |
|---|---|
| 15 | |
| 16 | |
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