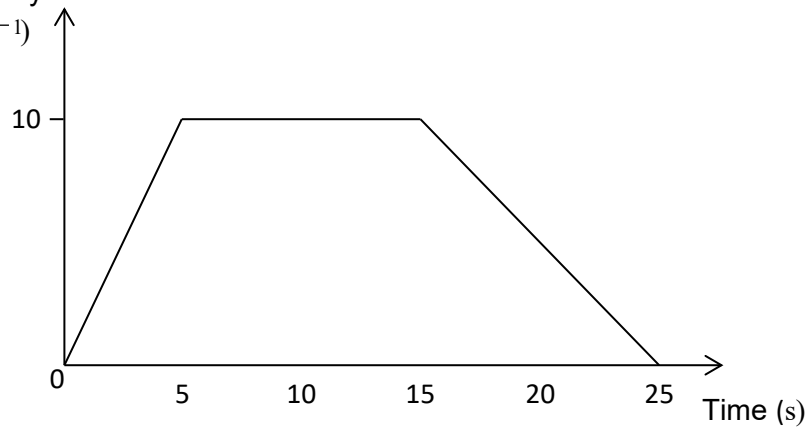
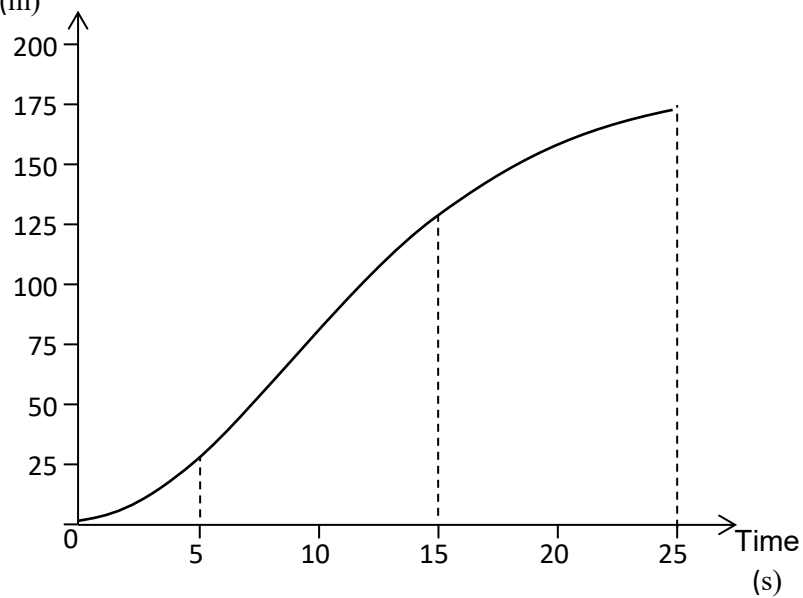


*One-Dimensional Motion***Answers****1 Representing Motion**

1. (a) Velocity
(ms^{-1})



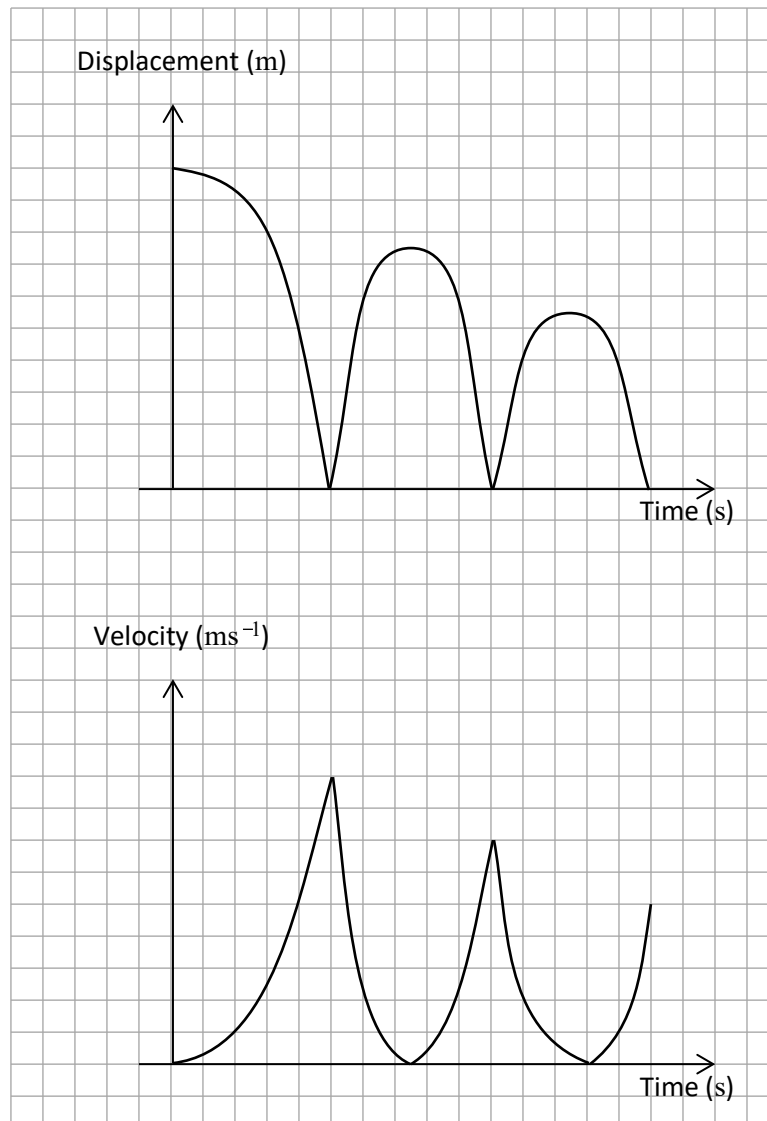
Distance
(m)



*One-Dimensional Motion**Answers*

1

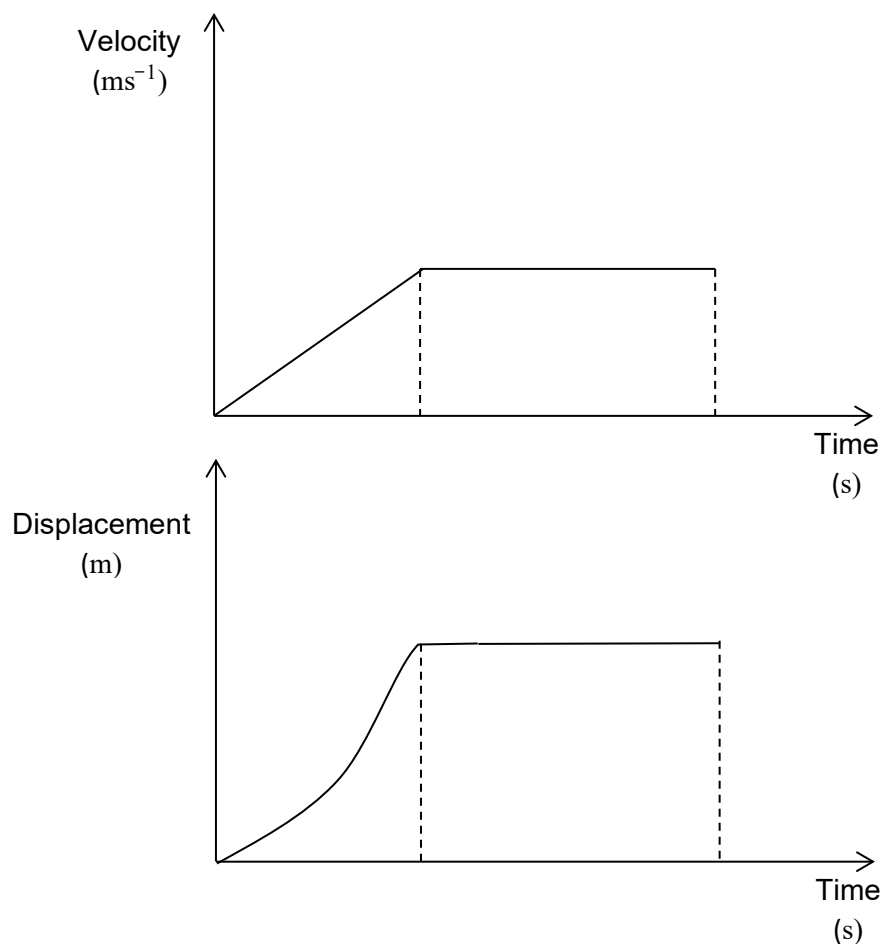
1. (b)



One-Dimensional Motion

Answers

1 1. (c)



2. (a) 0 (b) 2 ms^{-2} (c) $-\frac{5}{3} \text{ ms}^{-2}$ (d) 437.5 m
3. (c) -6 ms^{-2} (d) 148 m
4. Approx. 600 m
5. 60 m, if the pedestrian is to be able to cross at 3 mph before the arrival of a vehicle.
6. (a) $v(1) = 1$ (speed of 1 ms^{-1} in a forward direction)
 $v(2) = -3$ (speed of 3 ms^{-1} in a reverse direction)
 (b) When $t = \frac{5}{4}$ (after $\frac{5}{4} \text{ s}$) (c) -4 ms^{-2} all times
7. (a) $v(1) = -2$, $v(2) = 0$
 $t = 2$
 2 at all times
 (b) $v(1) = 6$, $v(2) = 0$
 $t = 2$ and $t = 3$
 -9 ms^{-2} , -3 ms^{-2}

*One-Dimensional Motion***Answers****1**

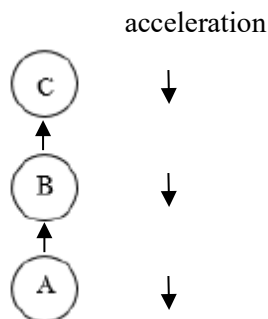
8. (a) $v = 13 - 10t$, $s = -6 + 13t - 5t^2$
 (b) $s(2) = 0$, $v(2) = -7$

2 Modelling Motion under Constant Acceleration

1. 0.417 ms^{-2}
2. 361 m
3. (a) 890 m (2 s.f.) (b) 67 s (2 s.f.)
4. 1200 m
5. (a) 2.92 ms^{-2} , 18.7 ms^{-1} (b) 8.55 s
6. (a) 16.3 ms^{-1} (b) 2.21 ms^{-2}
7. 0.580 ms^{-2} , 15.3 ms^{-1}
8. Assume that the record holder accelerated for 60 m at a uniform rate.
 (a) 15.25 ms^{-1} , (b) 1.94 ms^{-2}
9. 8.94 s
10. -10.7 ms^{-2} , 1.68 s

3 Acceleration and Gravity

1. (a) 2 s (b) a further 2 s
2. 2.08 s, 24.8 ms^{-1}
3. 6.53 s, -40.3 ms^{-1}
- 4.



5. (a) $40.1 \times 10^{14} (\text{m}^3 \text{ s}^{-2})$ (b) 32 km
6. $\frac{5}{3}h$
7. (a) The one thrown downwards (b) Both have the same speed. (c) 5.4 m, 5 m

*One-Dimensional Motion**Answers*

4 Force and Change in Motion

1. (a) 12.5 ms^{-2} (b) 0 (c) 469 m
2. 400 N
3. (a) 0.494 ms^{-2} (b) $9.88 \times 10^4 \text{ N}$
4. (a) 0.0675 ms^{-2} (b) 0.54 ms^{-1} , 10.8 m
5. (a) 30 ms^{-2} (b) 150 ms^{-2} , (c) 0
6. 700 N
7. 5230 N

5 Multiple Forces

1. (a) 4 ms^{-2}
2. An increase of weight by 20%, then normal weight; in the final stage you leave the floor with an acceleration upwards relative to the lift of 1 ms^{-2} .
3. 445 N
4. The box slides towards the front of the trolley with an acceleration relative to the trolley of 0.75 ms^{-2} . It falls off after 3.27 s.
5. (a) 0.0833 ms^{-2} (b) 333 N
6. (a) 2.5 ms^{-2} (b) 22.5 N (c) -2 ms^{-2}
7. (a) 1100 N (b) 400 N