

Science 10 Chapter 10 Review Physics

1. In constant acceleration the speed is constant

2. A ---3
B---1
C ---2

3. a) the object is not moving
b) the object has a constant speed
c) the object is accelerating
d) the object has a constant speed, the acceleration is zero
e) the object has a constant acceleration, the object's speed is increasing

7. $v_f = 6.0\text{m/s}$
 $v_i = 0\text{m/s}$
 $t = 3.0\text{s}$

$$a = \frac{v_f - v_i}{t} = \frac{6.0\text{m/s} - 0\text{m/s}}{3.0\text{s}} = \frac{6.0\text{m/s}}{3.0\text{s}} = 2\text{m/s}^2$$

8. $t = 0.10\text{s}$
 $a = 45\text{m/s}^2$
 $v_i = 0\text{m/s}$

$$v_f = v_i + at$$

$$v_f = 0\text{m/s} + (45\text{m/s}^2)(0.10\text{s})$$

$$v_f = 0\text{m/s} + 4.5\text{m/s}$$

$$v_f = 4.5\text{m/s}$$

9. $v_i = 0\text{ km/h}$
 $v_f = 35\text{km/h}$
 $t = 4.0\text{ min}$
 $a = ?$

$$a = \frac{v_f - v_i}{t} = \frac{35\text{km/h} - 0\text{km/h}}{4.0\text{min}} = \frac{35\text{km/h}}{4.0\text{min}} = 8.75\text{km/h/min}$$

10. $a = 0.10\text{m/s}^2$
 $v = 5.0\text{m/s}$

$$t = \frac{v}{a} = \frac{5.0\text{m/s}}{0.10\text{m/s}^2} = 50\text{s}$$

11. $a = 1.5\text{km/s}^2$
 $t = 1.0\text{ms}$
 $v_i = 0\text{km/s}$
 $v_f = ?$

$$v_f = v_i + at$$

$$v_f = 0\text{km/s} + (1.5\text{km/s}^2)(1.0\text{ms})$$

$$v_f = 0\text{km/s} + 1.5\text{km/ms}^3$$

$$v_f = 1.5\text{km/ms}^3$$

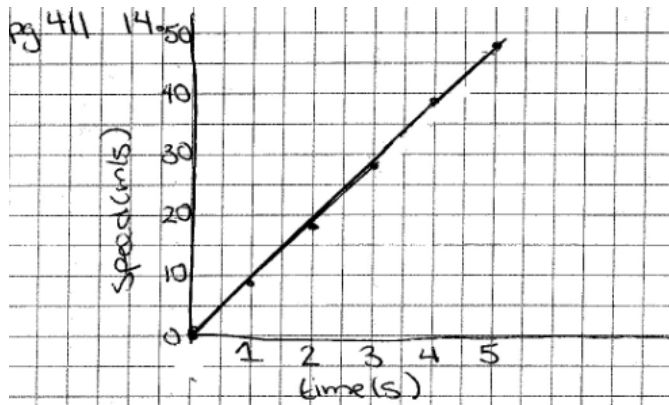
12. $a = 0.50\text{m/s}^2$
 $v_f = 9.7\text{m/s}$
 $t = 15\text{s}$
 $v_i = ?$

$$v_i = v_f - at$$

$$v_i = 9.7\text{m/s} - (0.50\text{m/s}^2)(15\text{s})$$

$$v_i = 9.7\text{m/s} - 7.5\text{m/s}$$

$$v_i = 2.2\text{m/s}$$



$$b) a = \frac{v_f - v_i}{t_2 - t_1}$$

$$a = \frac{49.5 \text{ m/s} - 0 \text{ m/s}}{5.0 \text{ s} - 0 \text{ s}}$$

$$a = \frac{49.5 \text{ m/s}}{5.0 \text{ s}}$$

$$a = 9.9 \text{ m/s}^2$$

$$c) D = \frac{1}{2} vt$$

$$D = \frac{1}{2} (50)(5)$$

$$D = \frac{1}{2} (250)$$

$$D = 125 \text{ m}$$

1. $t = 4 \text{ s}$

$$v_f = 9 \text{ m/s}$$

$$v_i = 5 \text{ m/s}$$

$$a = ?$$

$$a = \frac{v_f - v_i}{t} = \frac{9 \text{ m/s} - 5 \text{ m/s}}{4 \text{ s}} = \frac{4 \text{ m/s}}{4 \text{ s}} = 1 \text{ m/s}^2$$

2. $a = 2.2 \text{ m/s}^2$

$$t = 2.5 \text{ s}$$

$$v_i = 0 \text{ m/s}$$

$$v_f = ?$$

$$v_f = v_i + at$$

$$v_f = 0 \text{ m/s} + (2.2 \text{ m/s}^2)(2.5 \text{ s})$$

$$v_f = 0 \text{ m/s} + 5.5 \text{ m/s}$$

$$v_f = 5.5 \text{ m/s}$$

3. $v_i = ?$

$$v_f = 50 \text{ km/h}$$

$$a = 2.0 \text{ m/s}^2$$

$$t = 2.3 \text{ s}$$

$$-50 \text{ km/h} \times \frac{1 \text{ m/s}}{3.6 \text{ km/h}} = -13.9 \text{ m/s}$$

$$v_i = v_f - at$$

$$v_i = 13.9 \text{ m/s} - (2.0 \text{ m/s}^2)(2.3 \text{ s})$$

$$v_i = 13.9 \text{ m/s} - 4.6 \text{ m/s}$$

$$v_i = 9.3 \text{ m/s}$$

4. $a = 9.81 \text{ m/s}^2$

$$v_i = 4.5 \text{ m/s}$$

$$v_f = 19.4 \text{ m/s}$$

$$t = ?$$

$$t = \frac{v_f - v_i}{a} = \frac{19.4 \text{ m/s} - 4.5 \text{ m/s}}{9.81 \text{ m/s}^2} = \frac{14.9 \text{ m/s}}{9.81 \text{ m/s}^2} = 1.52 \text{ s}$$

5 a) acceleration from 0s to 4s

$$a = \frac{v_f - v_i}{t_2 - t_1} = \frac{8\text{m/s} - 0\text{m/s}}{4\text{s} - 0\text{s}} = \frac{8\text{m/s}}{4\text{s}} = 2\text{m/s}^2$$

b) acceleration from 4s to 10s

the speed is constant at 8m/s so the acceleration is 0m/s²

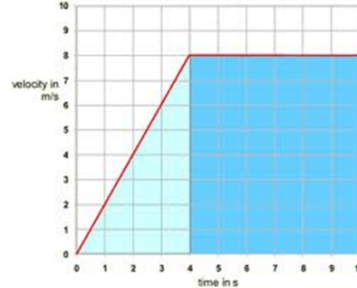
c) Total Distance

There are two sections to this graph

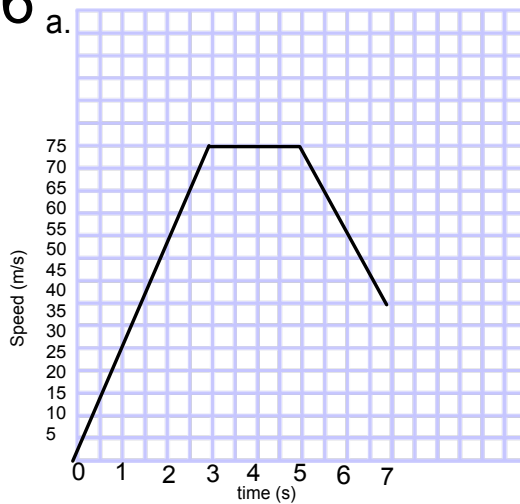
$$D = \frac{vt}{2} = \frac{(8\text{m/s})(4\text{s})}{2} = \frac{32\text{m}}{2} = 16\text{m}$$

$$D = vt = (8\text{m/s})(6\text{s}) = 48\text{m}$$

$$D_{\text{total}} = 16\text{m} + 48\text{m}$$



6



b) $a = \frac{v_f - v_i}{t_1 - t_2}$

$$a = \frac{125\text{ m/s} - 0\text{m/s}}{5\text{ s} - 0\text{ s}}$$

$$a = \frac{125\text{m/s}}{5\text{s}}$$

$$a = 25\text{ m/s}^2$$

c) the acceleration is zero

d) $a = \frac{v_f - v_i}{t_1 - t_2}$

$$a = \frac{35\text{m/s} - 75\text{m/s}}{7\text{s} - 5\text{s}}$$

$$a = \frac{-40\text{m/s}}{2\text{s}}$$

$$a = 20\text{ m/s}^2$$

e)

$$D = \frac{1}{2} vt$$

$$D = \frac{1}{2} (75) (3)$$

$$D = \frac{1}{2} (625)$$

$$D = 112.5\text{ m}$$

$$D = vt$$

$$D = (75)(2)$$

$$D = 150\text{m}$$

$$D_{\text{total}} = 112.5 + 150$$

$$D_{\text{total}} = 262.5\text{m}$$