

Pg 410-411

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 objects speed is increasing

$$7. v_2 = 6.0 \text{ m/s}$$

$$v_1 = 0 \text{ m/s}$$

$$t = 3.0 \text{ s}$$

$$a = \frac{v_2 - v_1}{t}$$

$$a = \frac{6.0 - 0 \text{ m/s}}{3.0 \text{ s}}$$

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

$$\begin{aligned} 8. \quad t &= 0.10 \text{ s} \\ a &= 45 \text{ m/s}^2 \\ v &= ? \end{aligned}$$

$$v = at$$

$$v = (45 \text{ m/s}^2)(0.10 \text{ s})$$

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

$$\begin{aligned} 9. \quad v &= 35 \text{ km/h} \\ t &= 4.0 \text{ min} \end{aligned}$$

$$a = \frac{v}{t}$$

$$a = \frac{35 \text{ km/h}}{4.0 \text{ min}}$$

$$a = 8.75 \text{ km/h/min}$$

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

$$v = 5.0 \text{ m/s}$$

$$t = \frac{v}{a}$$

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

$$t = 50 \text{ s}$$

$$11. a = 1.5 \text{ km/s}^2$$

$$t = 1.0 \text{ ms}$$

$$v_2 = ?$$

$$v = at$$

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

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

$$12. a = 0.50 \text{ m/s}^2$$

$$v_2 = 9.7 \text{ m/s}$$

$$t = 15 \text{ s}$$

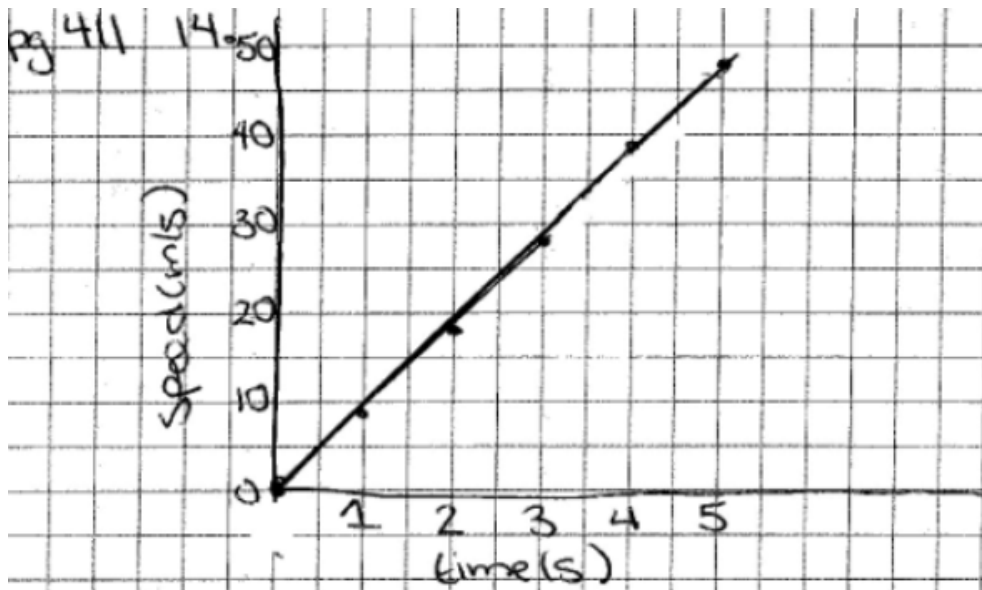
$$v_1 = ?$$

$$v_1 = v_2 - at$$

$$v_1 = 9.7 \text{ m/s} - (0.50 \text{ m/s}^2)(15 \text{ s})$$

$$v_1 = 9.7 \text{ m/s} - 7.5 \text{ m/s}$$

$$v_1 = 2.2 \text{ m/s}$$



14 b)  $a = \frac{v_2 - v_1}{t_2 - t_1}$  or  $\frac{y_2 - y_1}{x_2 - x_1}$

$$a = \frac{49.5 - 0}{5.0 - 0}$$

$$a = \frac{49.5 \text{ m/s}}{5 \text{ s}}$$

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

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

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

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

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

$$1. \quad t = 4s$$

$$v_2 = 9m/s$$

$$v_1 = 5m/s$$

$$a = \frac{v_2 - v_1}{t}$$

$$a = \frac{9m/s - 5m/s}{4s}$$

$$a = \frac{4m/s}{4s}$$

$$a = 1m/s^2$$

$$2. \quad a = 2.2m/s^2$$

$$t = 2.5s$$

$$v_1 = 0$$

$$v_2 = ?$$

$$v_2 = v_1 + at$$

$$v_2 = 0 + (2.2m/s^2)(2.5s)$$

$$v_2 = 5.5m/s$$

$$3. \quad v_1 = ?$$

$$v_2 = -50km/h$$

$$a = 2.0m/s^2$$

$$t = 2.3s$$

$$v_2 = -50km/h \div 3.6 = -13.9m/s$$

$$v_1 = v_2 - at$$

$$v_1 = -13.9m/s - (2.0m/s^2)(2.3s)$$

$$v_1 = -13.9m/s - 4.6m/s$$

$$v_1 = -18.5m/s$$

4.

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

$$v_2 = 19.4 \text{ m/s}$$

$$v_1 = 4.5 \text{ m/s}$$

$$t = ?$$

$$t = \frac{v_2 - v_1}{a}$$

$$t = \frac{19.4 \text{ m/s} - 4.5 \text{ m/s}}{9.81 \text{ m/s}^2}$$

$$t = \frac{14.9 \text{ m/s}}{9.81 \text{ m/s}^2}$$

$$t = 1.52 \text{ s}$$

5. a)  $a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10 - 10}{150 - 0} = \frac{0}{150} = 0 \text{ m/s}^2$

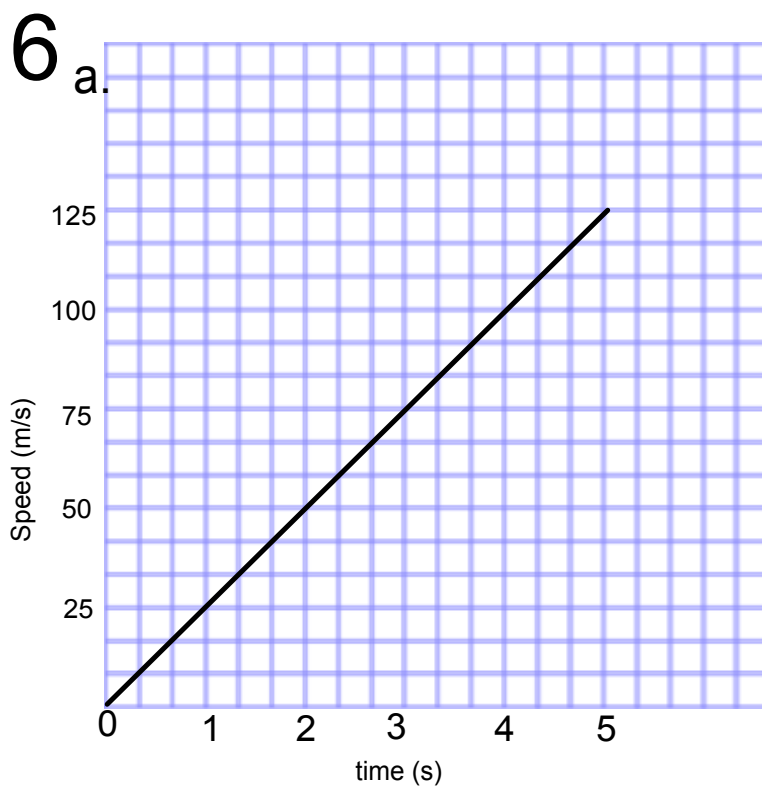
b)  $a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{30 - 10}{250 - 150} = \frac{20}{100} = 0.2 \text{ m/s}^2$

c)  $a_{bc} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{30 - 30}{300 - 250} = \frac{0}{50} = 0 \text{ m/s}^2$

d)  $a_{cd} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 30}{350 - 300} = \frac{-25}{50} = -0.5 \text{ m/s}^2$

5. e)  $D_A = v t$   
 $D_A = (150)(10)$   
 $D_A = 1500 \text{ m}$

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b)

$$a = \frac{v_2 - v_1}{t_1 - t_2}$$

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

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

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

c)

$$D = \frac{1}{2} v t$$

$$D = \frac{1}{2} (125) (5)$$

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

$$D = 312.5 \text{ m}$$