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 accleration, the objects speed is increasing

7. $V_2 = 6.0 m/s$
   $V_1 = 0 m/s$
   $t = 3.0 s$

   $a = \dfrac{V_2 - V_1}{t}$

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

   $a = 2 m/s^2$

8. $t = 0.10s$
   $a = 45 m/s^2$
   $v = ?$

$v = at$

$v = (45 m/s^2)(0.10s)$

$v = 4.5 m/s$

9. $v = 35 km/h$
   $t = 4.0 min$

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

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

$a = 8.75 km/h/min$

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

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

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

$t = 50 \text{s}$

11. $a = 1.5 \text{km/s}^2$
$t = 1.0 \text{ms}$
$v_2 = ?$

$v = at$
$v = (1.5 \text{km/s}^2)(1.0 \text{ms})$
$v = 1.5 \text{km/ms}^3$
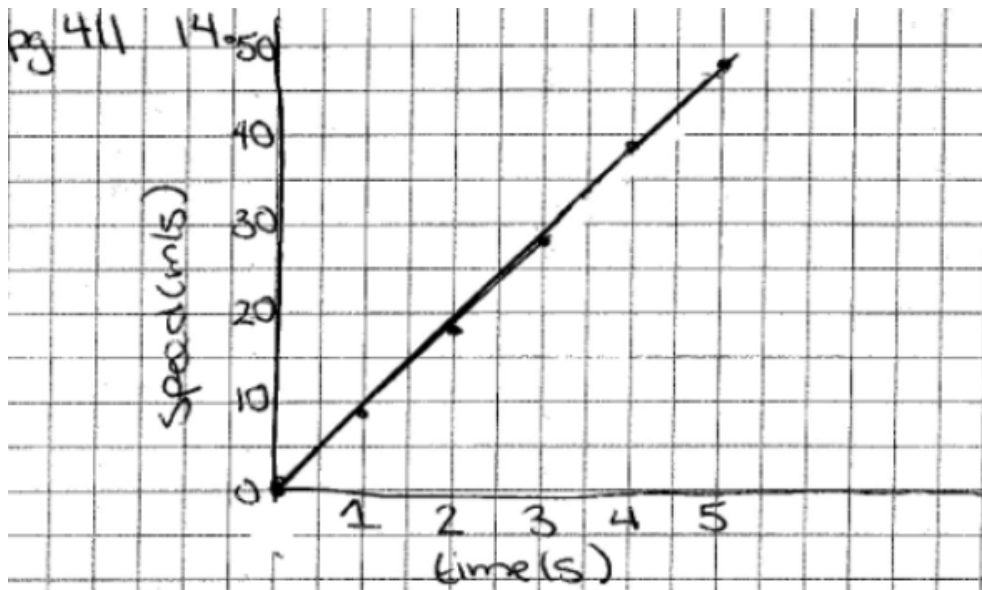
12. $a = 0.50 \text{m/s}^2$
$v_2 = 9.7 \text{m/s}$
$t = 15 \text{s}$
$v_1 = ?$

$v_1 = v_2 - at$
$v_1 = 9.7 \text{m/s} - (0.50 \text{m/s}^2)(15 \text{s})$
$v_1 = 9.7 \text{m/s} - 7.5 \text{m/s}$
$v_1 = 2.2 \text{m/s}$

14.

Speed (m/s) vs time (s)

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

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

$a = \dfrac{49.5 \, m/s}{5 \, s}$

$a = 9.9 \, m/s^2$

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

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

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

$D = 125 m$

1. $t = 4s$

   $v_2 = 9m/s$

   $v_1 = 5m/s$

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

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

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

   $a = 1 m/s^2$

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

   $t = 2.5s$

   $v_1 = 0$

   $v_2 = ?$

   $v_2 = v_1 + at$

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

   $v_2 = 5.5 m/s$

3. $v_1 = ?$

   $v_2 = -50 km/h$

   $a = 2.0 m/s^2$

   $t = 2.3s$

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

   $v_1 = v_2 - at$

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

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

   $v_1 = -18.5 m/s$

4.
$$a = 9.81 \, m/s^2$$
$$v_2 = 19.4 \, m/s$$
$$v_1 = 4.5 \, m/s$$
$$t = ?$$

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

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

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

$$t = 1.52 \, s$$

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

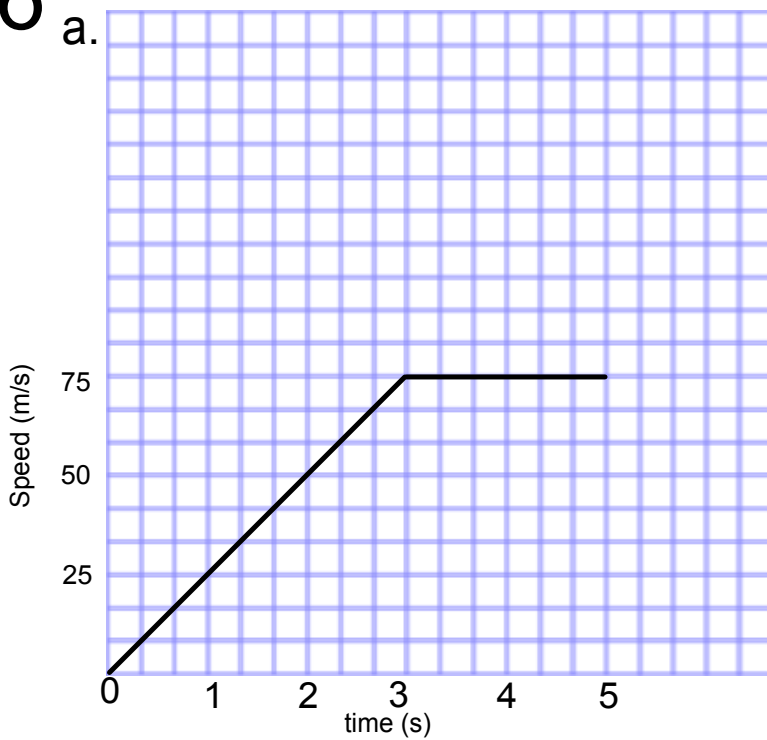b) $a_{AB} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{30 - 10}{250 - 150} = \frac{20}{100} = 0.2 \, m/s^2$

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

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

5.
e) $D_A = vt$
$$D_A = (150)(10)$$
$$D_A = 1500 \, m$$

6

a.

Y-axis: Speed (m/s) with markings 25, 50, 75
X-axis: time (s) with markings 0, 1, 2, 3, 4, 5

b) $a = \dfrac{v_2 - v_1}{t_1 - t_2}$

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

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

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

c) the accleration is zero

d) $D = \dfrac{1}{2} v t$

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

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

$D = 112.5 \text{ m}$

$D = vt$
$D = (75)(2)$
$D = 150\text{m}$

$D_{\text{-total}} = 112.5 + 150$
$D_{\text{total}} = 262.5\text{m}$