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 accleration, the objects speed is increasing

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

8. $t = 0.10$s $v_f = v_i + at$
   $a = 45$m/s^2 $v_f = 0$m/s $+ (45$m/s$^2)(0.10$s$)$
   $v_i = 0$m/s $v_f = 0$m/s $+ 4.5$m/s
                   $v_f = 4.5$m/s

9. $v_i = 0$ km/h $a = \dfrac{v_f - v_i}{t} = \dfrac{35\text{km/h} - 0\text{km/h}}{4.0\text{min}} = \dfrac{35\text{km/h}}{4.0\text{min}} = 8.75$km/h/min
   $v_f = 35$km/h
   $t = 4.0$ min
   $a = $?

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

11. $a = 1.5$km/s^2 $v_f = v_i + at$
    $t = 1.0$ms $v_f = 0$km/s $+ (1.5$km/s$^2)(1.0$ms$)$
    $v_i = 0$km/s $v_f = 0$km/s $+ 1.5$km/ms^3
    $v_f = $? $v_f = 1.5$km/ms^3

12. $a = 0.50$m/s^2 $v_i = v_f - at$
    $v_f = 9.7$m/s $v_i = 9.7$m/s $- (0.50$m/s$^2)(15$s$)$
    $t = 15$s $v_i = 9.7$m/s $- 7.5$m/s
    $v_i = $? $v_i = 2.2$m/s

pg 411 14
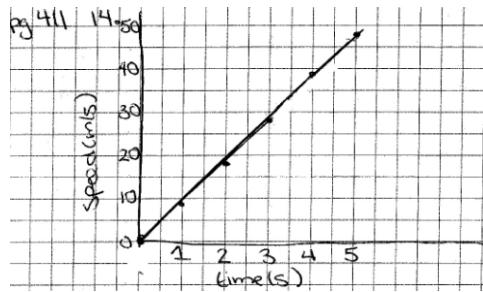
b) $a = \dfrac{v_f - v_i}{t_2 - t_1}$

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

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

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

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

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

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

$D = 125\text{m}$

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

2. $a = 2.2\text{m/s}^2$ $\qquad v_f = v_i + at$
    $t = 2.5\text{s}$ $\qquad v_f = 0\text{m/s} + (2.2\text{m/s}^2)(2.5\text{s})$
    $v_i = 0\text{m/s}$ $\qquad v_f = 0\text{m/s} + 5.5\text{m/s}$
    $v_f = ?$ $\qquad v_f = 5.5\text{m/s}$

3. $v_i = ?$ $\qquad -50\text{km/h} \times \dfrac{1\text{m/s}}{3.6\text{km/h}} = -13.9\text{m/s}$
    $v_f = 50\text{km/h}$
    $a = 2.0\text{m/s}^2$ $\qquad v_i = vf - at$
    $t = 2.3\text{s}$ $\qquad v_i = 13.9\text{m/s} - (2.0\text{m/s}^2)(2.3\text{s})$
    $\qquad\qquad v_i = -13.9\text{m/s} - 4.6\text{m/s}$
    $\qquad\qquad v_i = -18.5\text{m/s}$

4. $a = 9.81\text{m/s}^2$ $\qquad t = \dfrac{v_f - v_i}{a} = \dfrac{19.4\text{m/s} - 4.5\text{m/s}}{9.81\text{m/s}^2} = \dfrac{14.9\text{m/s}}{9.81\text{m/s}^2} = 1.52\text{s}$
    $v_i = 4.5\text{m/s}$
    $v_f = 19.4\text{m/s}$
    $t = ?$

5 a) acceleration from Os to 4s

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

b) accceleration from 4s to 10s
the speed is constant at 8m/s so the acceleration is 0m/s^2

c) Total Distance
There are two section to this graph

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

$$D = vt = (8m/s)(6s) = 48m$$

$$D_{total} = 16m + 48m$$
$$D_{total} = 64m$$

6 a.

b) $a = \frac{v_f - v_i}{t_1 - t_2}$
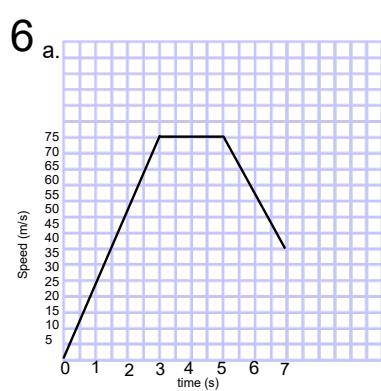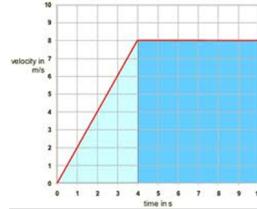
$a = \frac{75m/s - 0m/s}{3s - 0 s}$

$a = \frac{75m/s}{3s}$

$a = 25 m/s^2$

c) the accleration is zero

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

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

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

$a = -20 m/s^2$

e)

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

$\qquad\qquad\qquad$ $D = (75)(2)$

$D = \frac{1}{2} (75)(3)$ $\qquad$ $D = 150m$

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

$D = 112.5 m$

$D_{total} = 112.5 + 150$
$D_{total} = 262.5m$