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. $v_f = 6.0m/s$
   $v_i = 0m/s$
   $t = 3.0s$

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

8. $t = 0.10s$
   $a = 45m/s^2$
   $v_i = 0m/s$

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

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

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

10. $a = 0.10m/s^2$
    $v = 5.0m/s$

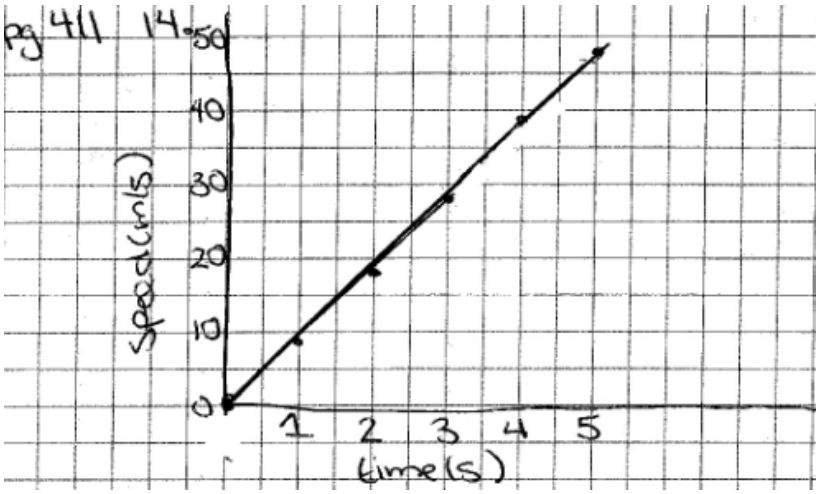
    $t = \frac{v}{a} = \frac{5.0m/s}{0.10m/s^2} = 50s$

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

    $v_f = v_i + at$
    $v_f = 0km/s + (1.5km/s^2)(1.0ms)$
    $v_f = 0km/s + 1.5km/ms^3$
    $v_f = 1.5km/ms^3$

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

    $v_i = v_f - at$
    $v_i = 9.7m/s - (0.50m/s^2)(15s)$
    $v_i = 9.7m/s - 7.5m/s$
    $v_i = 2.2m/s$



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

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

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

$a = 9.9m/s^2$

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

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

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

$D = 125m$

1. $t = 4s$
   $v_f = 9m/s$
   $v_i = 5m/s$
   $a = ?$

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

2. $a = 2.2m/s^2$
   $t = 2.5s$
   $v_i = 0m/s$
   $v_f = ?$

   $v_f = v_i + at$
   $v_f = 0m/s + (2.2m/s^2)(2.5s)$
   $v_f = 0m/s + 5.5m/s$
   $v_f = 5.5m/s$

3. $v_i = ?$
   $v_f = 50km/h$
   $a = 2.0m/s^2$
   $t = 2.3s$

   $-50km/h \times \frac{1m/s}{3.6km/h} = -13.9m/s$
   $v_i = vf - at$
   $v_i = 13.9m/s - (2.0m/s^2)(2.3s)$
   $v_i = -13.9m/s - 4.6m/s$
   $v_i = -18.5m/s$

4. $a = 9.81m/s^2$
   $v_i = 4.5m/s$
   $v_f = 19.4m/s$
   $t = ?$

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

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

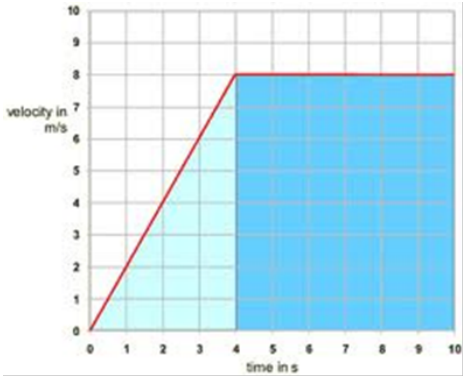
There are two section to this graph

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

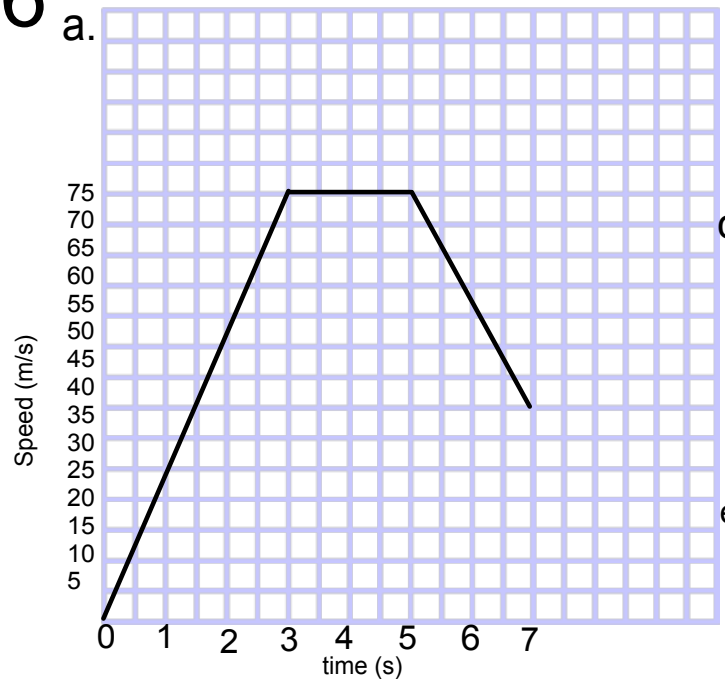
$$D = vt = (8m/s)(6s) = 48m$$

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

$$D_{total} = 64m$$



6 a.



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

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

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

$a = 25\ m/s^2$

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)

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

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

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

$D = 112.5\ m$

$D = vt$

$D = (75)(2)$

$D = 150m$

$D_{-total} = 112.5 + 150$

$D_{total} = 262.5m$