

Exc 1AWEEK 1

③ $S = 530$ nautical mile
 $U = 25$ knots

$$\therefore S = ut$$

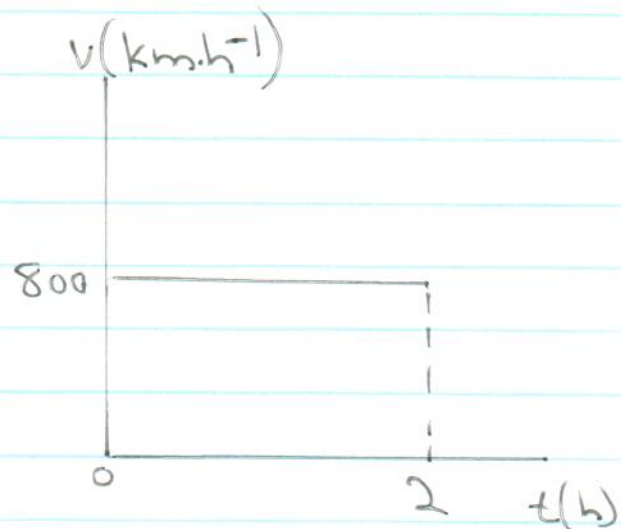
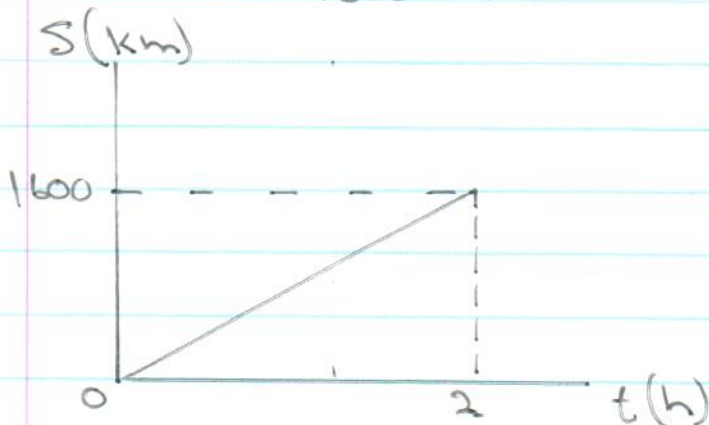
$$\therefore t = \frac{S}{u} = \frac{530}{25} = 21,2 \text{ hours}$$

④ $U = 1,8 \text{ k.p.h (km h}^{-1}\text{)}$
 $t = 14 \text{ h}$

$$\therefore S = ut = 1,8 (14) = 25,2 \text{ km South}$$

⑦ $U = 120 \frac{\text{km}}{\text{h}} = 120 \times \frac{1000 \text{ m}}{60 \times 60 \text{ s}} = 33\frac{1}{3} \text{ m.s}^{-1}$

⑨ $U = 800 \text{ km.h}^{-1}$
 $S = 1600 \text{ km}$



$$S = ut \Rightarrow t = \frac{S}{u} = \frac{1600}{800} = 2 \text{ h}$$

Need to take-off and landing into consideration.

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③ $u = 20 \text{ m s}^{-1}$ $S = 1000 \text{ m}$ $t = 25 \text{ s}$

$$S = ut + \frac{1}{2} at^2$$

$$\therefore 1000 = 20(25) + \frac{1}{2} a (25)^2$$

(a) $\therefore a = 1,6 \text{ m s}^{-2}$

(b) $v = u + at = 20 + 1,6(25) = 60 \text{ m.s}^{-1}$

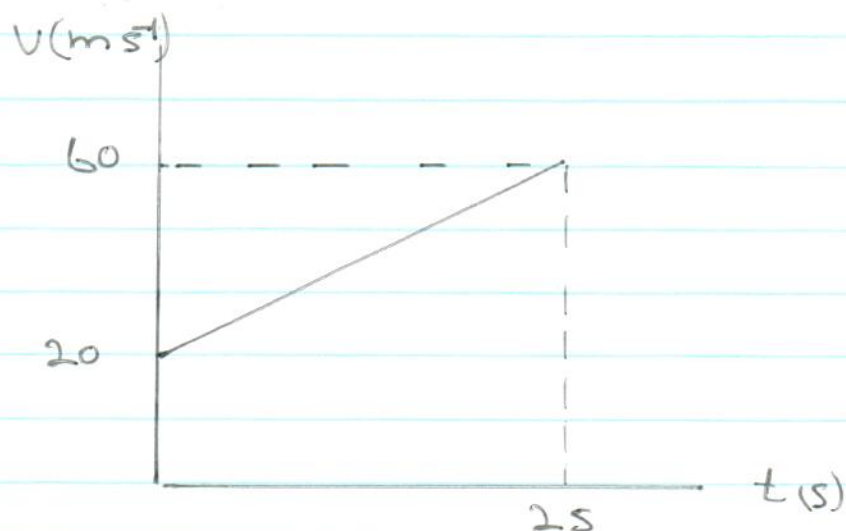
(c) $S = ut + \frac{1}{2} at^2$

$$\therefore 500 = 20t + \frac{1}{2} \cdot 1,6 t^2$$

$$\therefore t^2 + 25t - 625 = 0$$

$$\therefore t = \frac{-25 \pm \sqrt{25^2 - 4(1)(-625)}}{2}$$

$\therefore t = 15,5 \text{ s}$ (Not valid $t = -40,5 \text{ s}$)



$$\textcircled{5} \quad u = 0 \quad \bar{v} = 60 \text{ m s}^{-1}$$

$$s = 900 \text{ m}$$

$$s = \frac{1}{2} (u + v) t$$

$$\therefore t = \frac{2s}{u+v} = \frac{2(900)}{0+60} = 30 \text{ s}$$

Further: $v = u + at$

$$\therefore a = \frac{v-u}{t} = \frac{60-0}{30} = 2 \text{ m} \cdot \text{s}^{-2}$$

$$\textcircled{6} \quad u = 80 \text{ m} \cdot \text{s}^{-1}$$

$$a = -2 \text{ m} \cdot \text{s}^{-2}$$

$$t = 30 \text{ s}$$

$$v = u + at \Rightarrow v = 80 - 2(30) = 20 \text{ m} \cdot \text{s}^{-1}$$

$$s = \frac{1}{2} (u + v) t = \frac{1}{2} (80 + 20) 30 = 1500 \text{ m}$$
