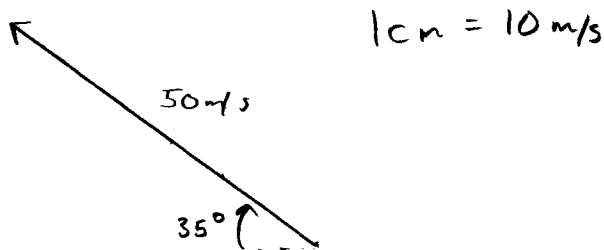


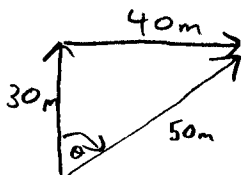
# Kinematics Review

1. time, mass, temperature
2. velocity, displacement, acceleration

3.



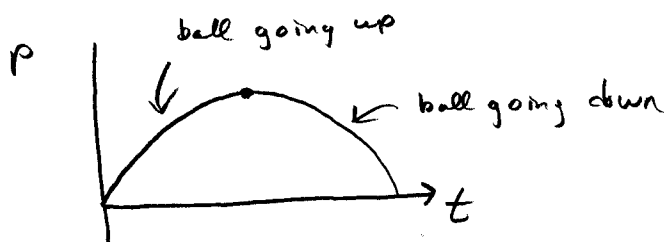
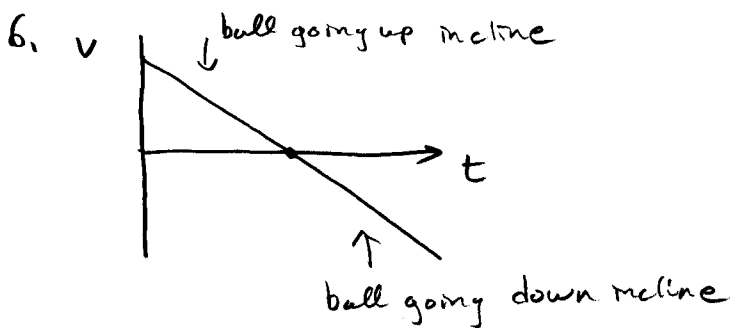
4.



50 m 53° E of N

$$\theta = \tan^{-1}\left(\frac{40}{30}\right) = 53^\circ$$

5. Speed =  $\frac{\text{distance}}{\text{time}} = \frac{200 \text{ km}}{1.5 \text{ h}} = 133 \text{ km/h}$  (90 min = 1.5 hours)



7. (a) velocity is slope

$$A: \frac{35 - 0}{.45 - 0} = \underline{77.8 \text{ km/h}}$$

$$B: \underline{0}$$

$$C: \frac{0 - 35}{1.8 - 1.5} = \underline{-116.7 \text{ km/h}}$$

(b) average velocity =  $\frac{d}{t} = \frac{0}{1.8} = \underline{\underline{0}}$

$$8. v_i = 7 \text{ m/s}$$

$$v_f = 10 \text{ m/s}$$

$$t = 20 \text{ s}$$

$$a = ?$$

$$v_f = v_i + at$$

$$10 = 7 + a(20)$$

$$3 = a(20)$$

$$a = \underline{0.15 \text{ m/s}^2}$$

$$9. v_i = 90 \text{ km/h} = 25 \text{ m/s}$$

$$v_f = 0$$

$$t = 20 \text{ s}$$

$$a = ?$$

$$v_f = v_i + at$$

$$0 = 25 + a(20)$$

$$-25 = a(20)$$

$$a = \underline{-1.25 \text{ m/s}^2}$$

$$10. d = 370 \text{ m}$$

$$v_i = 0$$

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

$$v_f = ?$$

$$d = \left( \frac{v_i + v_f}{2} \right) t$$

$$370 = \left( \frac{0 + v_f}{2} \right) (30)$$

$$740 = v_f(30)$$

$$v_f = \underline{24.7 \text{ m/s}}$$

$$11. v_i = 30 \text{ m/s}$$

$$v_f = 40 \text{ m/s}$$

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

$$d = ?$$

$$d = \left( \frac{v_i + v_f}{2} \right) t$$

$$= \left( \frac{30 + 40}{2} \right) 30$$

$$= \left( \frac{70}{2} \right) 30$$

$$= 35(30)$$

$$d = \underline{1050 \text{ m}}$$

12.  $v_i = 30 \text{ m/s}$   
 $v_f = 0$   
 $a = -0.6 \text{ m/s}^2$   
 $t = ?$

$$v_f = v_i + at$$

$$0 = 30 + (-0.6)t$$

$$-30 = -0.6t$$

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

13.  $v_i = 1.2 \text{ m/s}$   
 $d = 90 \text{ m}$   
 $t = 0.5 \text{ min} = 30 \text{ s}$   
 $a = ?$   
 $v_f = ?$

$$d = \left( \frac{v_i + v_f}{2} \right) t$$

$$90 = \left( \frac{1.2 + v_f}{2} \right) 30$$

$$180 = (1.2 + v_f) 30$$

$$6 = 1.2 + v_f$$

$$v_f = \underline{4.8 \text{ m/s}}$$

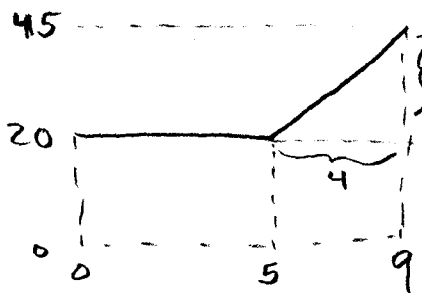
$$v_f = v_i + at$$

$$4.8 = 1.2 + a(30)$$

$$3.6 = a(30)$$

$$a = \underline{0.12 \text{ m/s}^2}$$

14. (c) displacement is area

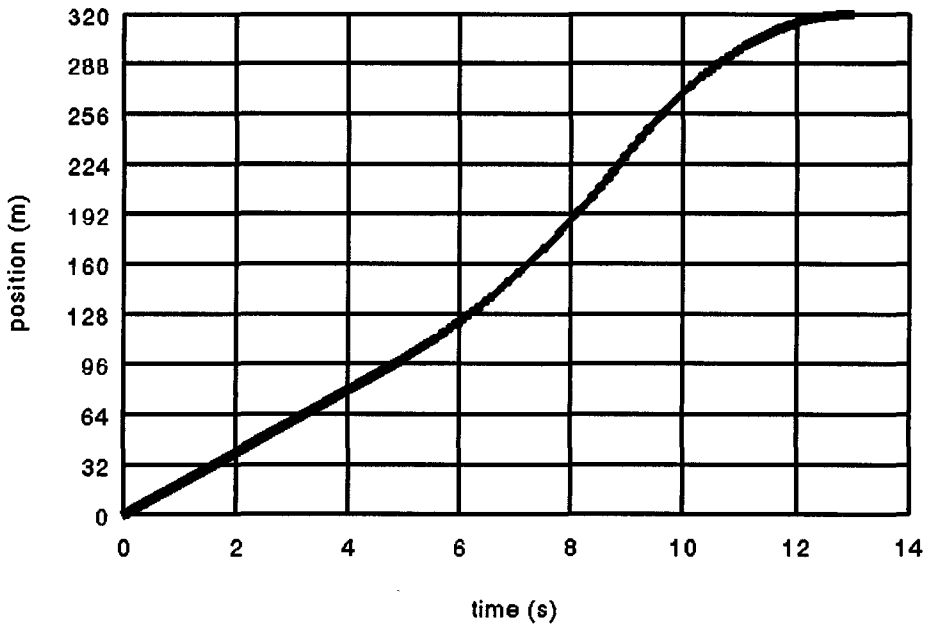


$$d = 20(9) + \frac{4(25)}{2}$$

$$= 180 + 50$$

$$= \underline{230 \text{ m}}$$

14. (b)



14. (c)

