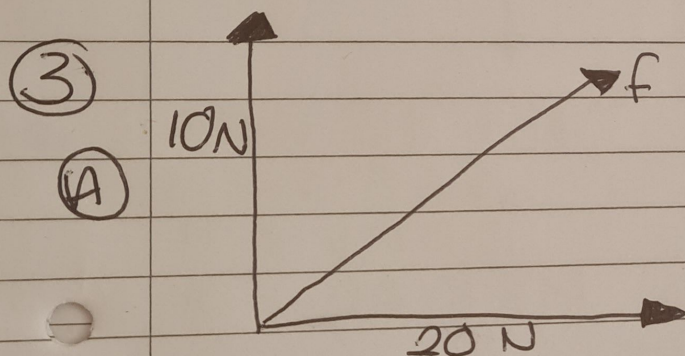
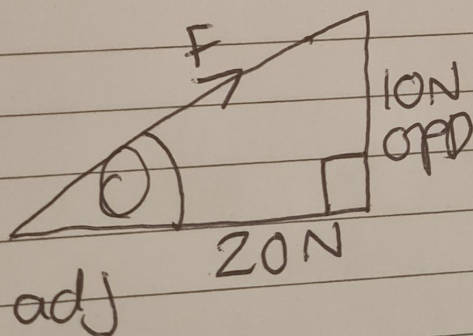


- ①
- ⓐ mass = kg
 - ⓑ force = N
 - ⓒ weight = N
 - ⓓ Velocity = m/s
 - ⓔ Acceleration = m/s²

② Pressure = $\frac{\text{force}}{\text{Area}} = \text{N/m}^2$

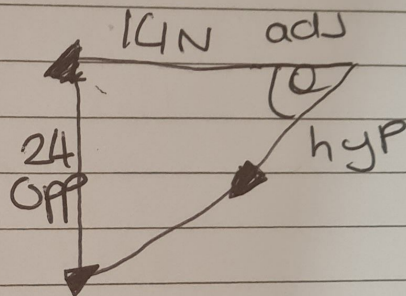
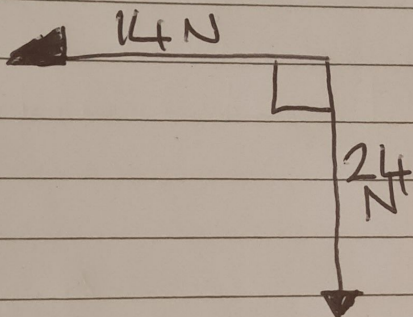
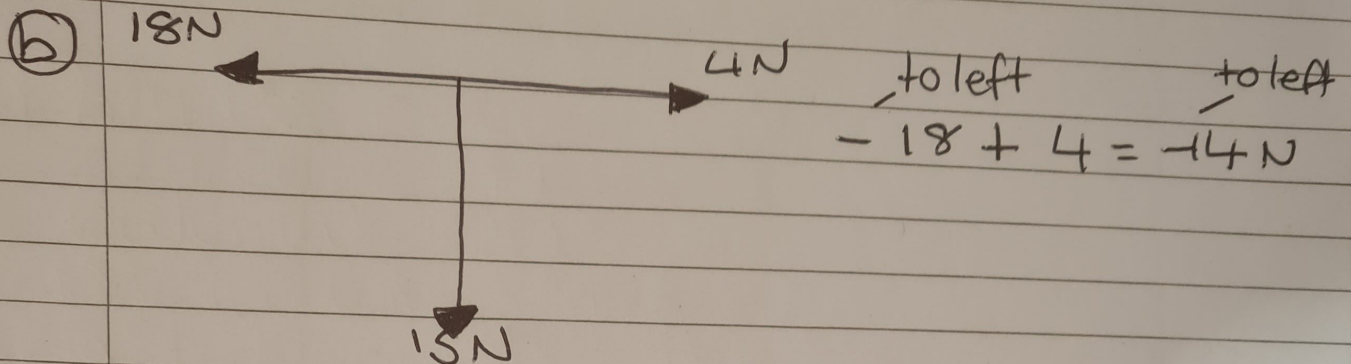


$$\begin{aligned}\Sigma f^2 &= 20^2 + 10^2 \\ \Sigma f^2 &= 500 \\ F &= \sqrt{500} \\ F &= 22.36 \text{ N}\end{aligned}$$



$$\begin{aligned}\text{Tan} &= \frac{\text{opp}}{\text{adj}} \\ \text{Tan} \theta &= \text{Tan}^{-1}\left(\frac{10}{20}\right) \\ \theta &= 26.57^\circ\end{aligned}$$

resultant is 22.36 N to the right,
26.5° above the horizontal.
bearing = 90 - 26.57
= 63.43°



$$R^2 = 24^2 + 14^2$$

$$R^2 = 772$$

$$R = \sqrt{772}$$

$$R = 27.78\text{N}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

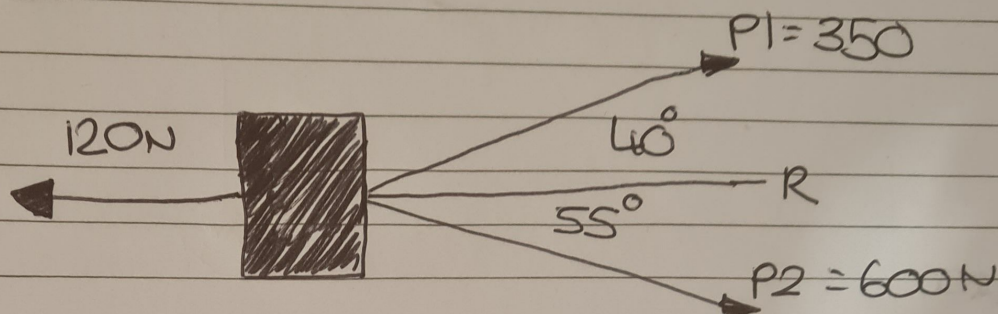
$$\tan \theta = \frac{24}{14}$$

$$\theta = \tan^{-1}\left(\frac{24}{14}\right) = 59.74^\circ$$

resultant is 27.78N to the left,
59.74° below the horizontal.
bearing = $270 - 59.74$
= 210.26°

19/07/22 Kelly Casey 2106451 page 3 of 6
Introduction to mathematics and
Science ACHIA3000

(4)



$$R = \text{Adj.}$$

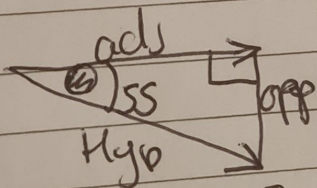
$$\cos 20 = \frac{\text{Adj}}{\text{Hyp}}$$

$$\cos 20 = \frac{R}{\text{Hyp}}$$

$$350 \times \cos 20 = \frac{R}{\text{Hyp}} \times 350$$

$$350 \times \cos 20 = R \times \frac{350}{350}$$

$$P1 \quad R = 328.87N$$



$$R = \text{Adj}$$

$$\cos 20 = \frac{\text{Adj}}{\text{Hyp}}$$

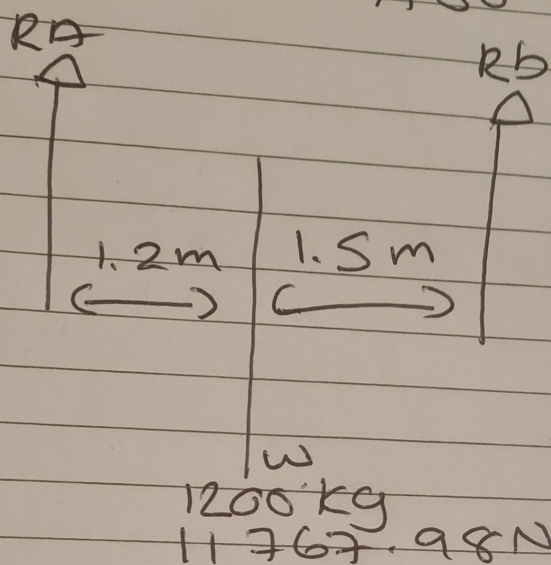
$$\cos 20 = \frac{R}{600N}$$

$$600 \times \cos 20 = \frac{R}{600} \times 600$$

$$P2 \quad R = 563.82$$

$$P2 + P1 = 892.71N$$

19/07/22 Kelly Casey 2106451 Page 4 of 6
Introduction to mathematics &
Science ACT H3000



Forces up = forces down

$$R_A + R_B = W$$

$$R_A + R_B = 11767.98\text{ N}$$

Let point of contact of R_A = pivot
 $C_{wm} = A_{Cwm}$

$$11767.98 \times 1.2\text{ m} = R_B (1.5 + 11767.98)$$

$$\frac{11767.98 \times 1.2}{1.5 + 11767.98} = \frac{R_B \times (1.5 + 11767.98)}{11767.98}$$

$$\frac{11767.98 \times 1.2}{1178.48} = R_B$$

$$1178.48$$

$$R_B = 0.12\text{ N}$$

$$R_A + R_B = 11767.98\text{ N}$$

$$R_A + 0.12\text{ N} = 11767.98\text{ N}$$

$$R_A = 11767.98 - 0.12$$

$$R_A = 11767.86\text{ N}$$

6.

a Flow is Positive to negative

b Parallel Circuit

$$1/3$$

$$1/4$$

$$1/5$$

$$20/60$$

$$15/60$$

$$12/60$$

$$60/47 = 1.28$$

$$\text{total circuit} = 1.28 + 10 = 11.28$$

c Voltage/resistance

$$18/11.28 = 1.6$$

1.6 draw on battery

D Voltage across R_4

current $\times$ resistance

$$1.6 \times 10 = 16$$

19/07/22 Kelly CASEY 2106451 page 6 of 6
Introduction to mathematics &
Science ACT143000

e Current across $R_2 = 4.5$ amps

f Current across $R_3 = 3.6$ amps

g R_1 transfers the highest amount
of energy.