

Exam

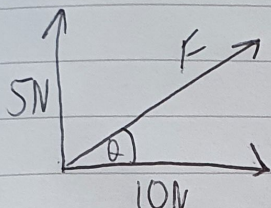
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- 1. a) m^2
- b) m^3
- c) kg
- d) N
- e) N

2. kg/m^3

3. a)



$$\begin{aligned}5^2 + 10^2 &= F^2 \\25 + 100 &= F^2 \\125 &= F^2 \\11.18N &= F\end{aligned}$$

$$\tan \theta = \frac{5}{10}$$

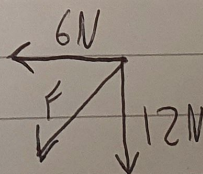
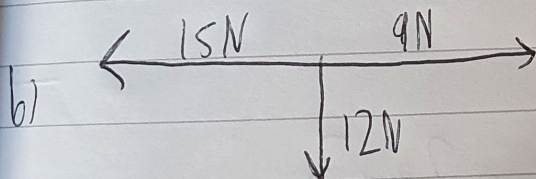
$$\theta = \tan^{-1} \frac{5}{10}$$

$$\theta = 26.57^\circ$$

$$\text{Bearing} = 63.43^\circ$$

$\therefore$ Resultant is 11.18N to the right, 26.57° above the horizontal

$$90 - 26.57 = 63.43^\circ$$



$$\begin{aligned}6^2 + 12^2 &= F^2 \\36 + 144 &= F^2 \\180 &= F^2 \\13.42N &= F\end{aligned}$$

$$15 - 9 = 6$$

$$\tan \theta = \frac{12}{6}$$

$$\theta = \tan^{-1} \frac{12}{6}$$

$$\theta = 63.43^\circ$$

$\therefore$ Resultant is 13.42N to the left, 63.43° below the horizontal

$$\text{Bearing} = 206.57^\circ$$

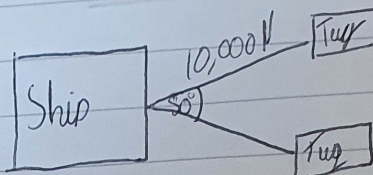
$$180 + (90 - 63.43) = 206.57^\circ$$

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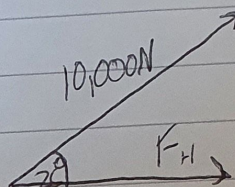
4.a)



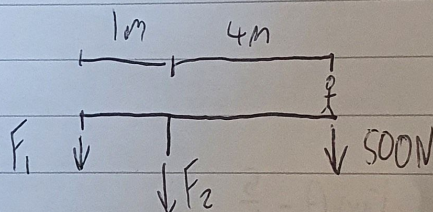
$$F_H = 10000 \cos 25$$

$$F_H = 9063.08$$

$$9063.08 \times 2 = 18126.16 \text{ N}$$



5.a)



$$500 \times 4 = 2000$$

$$2000 \div 1 = 2000 \text{ N}$$

$$F_1 = 2000 \text{ N}$$

b)

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b) a) A

$$b) 0.5 + 3 + \frac{1}{2} + \frac{1}{6} = 4.17 \Omega$$

$$c) 12 \div 4.17 = 2.88 \text{ A}$$

$$d) 2.88 \times 3 = 8.64 \text{ V}$$

$$e) 12 - 8.64 + V_3 = 0$$

$$V_3 = 3.36 \text{ V}$$

$$3.36 \div 2 = 1.68 \text{ A}$$

$$f) 3.36 \div 6 = 0.56 \text{ A}$$

g)

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