

Science Exam

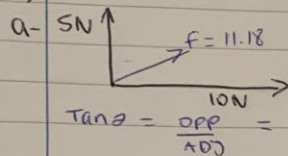
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1)

- a- Area = Square meter = m^2
 b- Volume = Cubic meter = m^3
 c- Mass = Kilogram = kg
 d- Force = Newton = $kg \cdot m/s^2$
 e- Weight = Newton = $kg \cdot m/s^2 = N$

2) kg/m^3 = Kilogram per cubic meter

3)

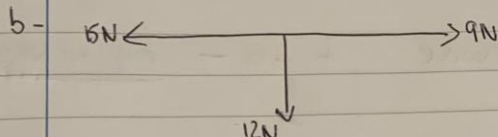


Pyth $a^2 + b^2 = c^2$
 $\therefore F^2 = 5^2 + 10^2 = 125$
 $F = \sqrt{125} = 11.18 N$

$$\tan \theta = \frac{\text{OPP}}{\text{ADJ}} = \frac{5}{10}$$

$$\theta = \tan^{-1} \frac{5}{10} \quad \theta = 26.57^\circ \therefore \text{resultant is } 11.18$$

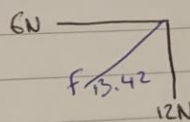
to the right and 26.57°
 above horizontal



$$9 - 5 = 4 \quad \therefore 26.57^\circ = 153.43^\circ \text{ bearing}$$

$$90 - 26.57 = 63.43^\circ \text{ bearing}$$

$$9 - 5 = 4$$



$a^2 + b^2 = c^2$
 $\therefore F^2 = 4^2 + 12^2 = 160$
 $F = \sqrt{160} = 13.42$

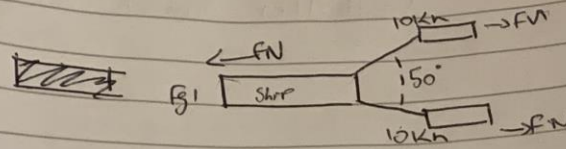
$$\tan \theta = \frac{\text{OPP}}{\text{ADJ}} = \frac{4}{12}$$

$$\theta = \tan^{-1} \frac{4}{12} = 26.57^\circ \therefore \text{resultant is } 13.42 \text{ to the left}$$

and 26.57° horizontal

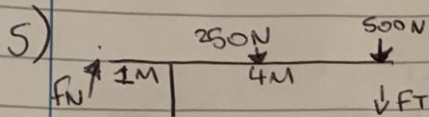
$$180 + (90 - 26.57) = 243.43^\circ \text{ bearing}$$

4



- ~~a) We know the ship is not giving any forces~~
 b) drag = $10\text{kN} + 10\text{kN} = 20\text{kN}$

a) We know the ship is not giving forces back or forward. Forces up = forces down
 $\therefore 20\text{kN}$



- a) $250 \div 5 = 50\text{N}$ on bolt
 b) 250N

- a) $A = \text{ANTICLOCKWISE} + + - \text{pos to NEG}$
 b) 4.167Ω
 c. 2.88Amp
 d.
 e.
 f.
 g.