

Science Exam

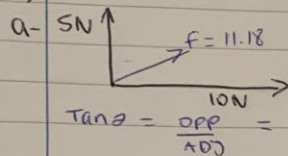
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1)

- 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)

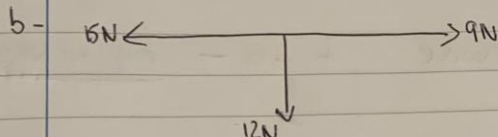


Pyth $a^2 + b^2 = c^2$
 $\therefore F^2 = 5^2 + 10^2 = 125$
 $F = \sqrt{125} = 11.18 N$

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

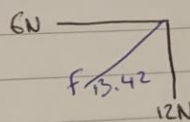
$\theta = \tan^{-1} \frac{5}{10} \quad \theta = 26.57^\circ \therefore \text{resultant is } 11.18$

to the right and 26.57°
above horizontal



$\cancel{11.18} - 26.57 = 153.43^\circ \text{ bearing}$
 $90 - 26.57 = 63.43^\circ \text{ bearing}$

~~153~~ $5 - 9 = 6$



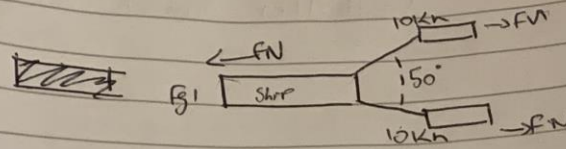
$a^2 + b^2 = c^2$
 $\therefore F^2 = 6^2 + 12^2 = 180$
 $F = \sqrt{180} = 13.42$

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

$\theta = \tan^{-1} \frac{6}{12} = 26.57^\circ = \theta \therefore \text{resultant is } 13.42 \text{ to the left}$
 and 26.57° horizontal

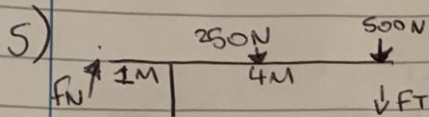
$180 + (90 - 26.57) = 243.43^\circ \text{ bearing}$

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) 250 N

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