

Exam

A CHA 3000

2103851

1. a) m^2

b) m^3

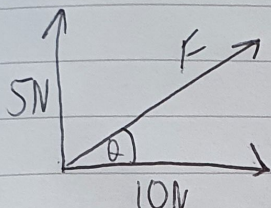
c) kg

d) N

e) N

2. kg/m^3

3. a)



$$5^2 + 10^2 = F^2$$

$$25 + 100 = F^2$$

$$125 = F^2$$

$$11.18N = F$$

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

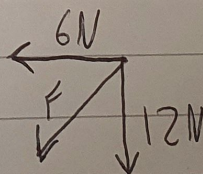
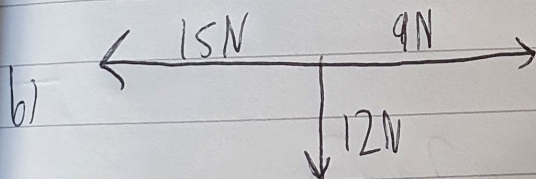
$$\theta = \tan^{-1} \frac{5}{10}$$

$$\theta = 26.57^\circ$$

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

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

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



$$6^2 + 12^2 = F^2$$

$$36 + 144 = F^2$$

$$180 = F^2$$

$$13.42N = F$$

$$15 - 9 = 6$$

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

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

$$\theta = 63.43^\circ$$

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

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

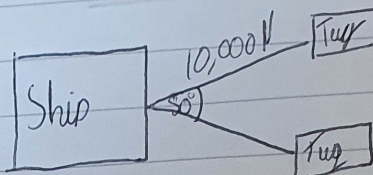
$$180 + (90 - 63.43) = 206.57^\circ$$

Page 1 of 3

ALHA 3000

2103851

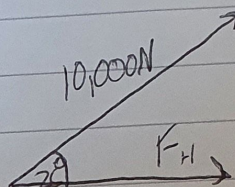
4. a)



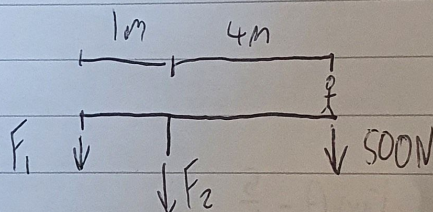
$$F_H = 10000 \cos 25$$

$$F_H = 9063.08$$

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



5. a)



$$500 \times 4 = 2000$$

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

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

b)

Page 2 of 3

ACHA 3000
2103851

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)

Page 3 of 3