BYG140 KONSTRUKSJONSMEKANIKK 1
Assignment (1)
(Statics Ch 1: Basic Principles & Ch 2: Force Vectors)

Question 1

***1–8.** If a car is traveling at 88.5 km/h, determine its speed in meters per second.

Question 2

1–10. What is the weight in newtons of an object that has a mass of: (a) 10 kg, (b) 0.5 g, and (c) 4.50 Mg? Express the result to three significant figures. Use an appropriate prefix.

Question 3

•2–9. The plate is subjected to the two forces at A and B as shown. If $\theta = 60°$, determine the magnitude of the resultant of these two forces and its direction measured clockwise from the horizontal.

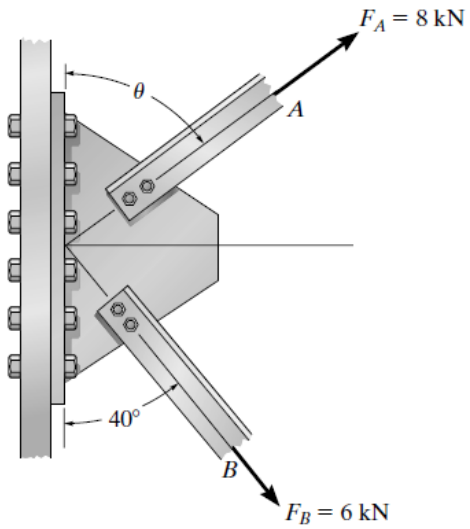


Figure Q3

Question 4

2–51. If $F_1 = 150$ N and $\phi = 30°$, determine the magnitude of the resultant force acting on the bracket and its direction measured clockwise from the positive x axis.

Question 5

***2–52.** If the magnitude of the resultant force acting on the bracket is to be 450 N directed along the positive u axis, determine the magnitude of $\mathbf{F}_1$ and its direction ϕ.

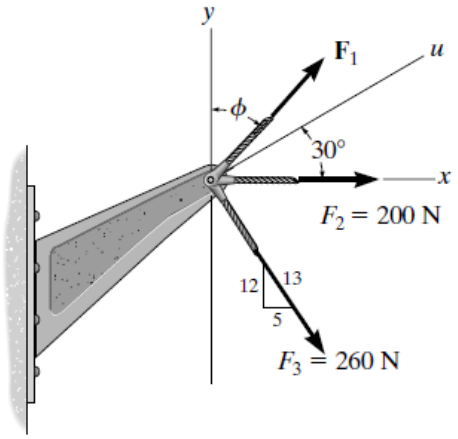


Figure Q4 & Q5

Question 6

2–70. If the resultant force acting on the bracket is to be $\mathbf{F}_R = \{800\mathbf{j}\}$ N, determine the magnitude and coordinate direction angles of $\mathbf{F}$.

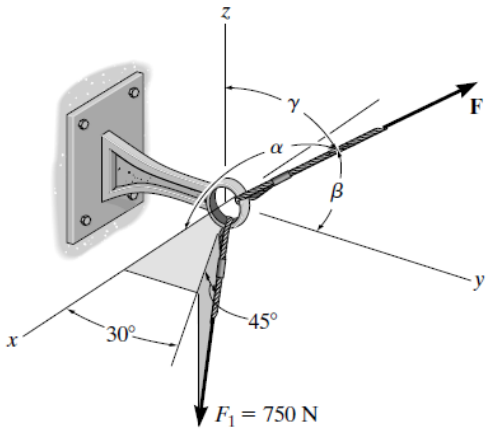
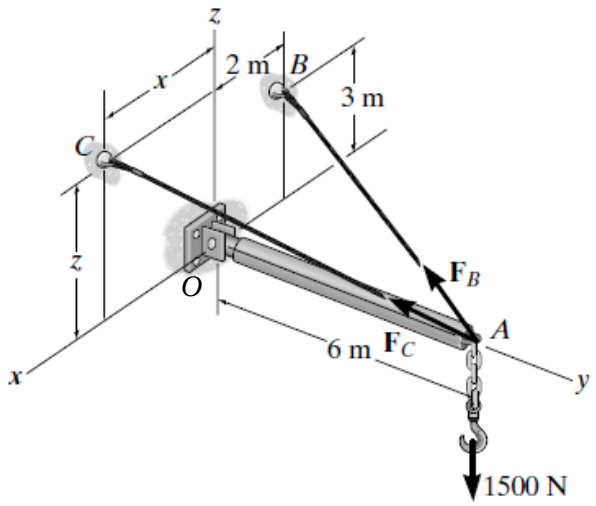


Figure Q6

Question 7

***2–100.** Two cables are used to secure the overhang boom in position and support the 1500-N load. If the resultant force is directed along the boom from point A towards O, determine the values of x and z for the coordinates of point C and the magnitude of the resultant force. Set $F_B = 1610$ N and $F_C = 2400$ N.



Question Q7

Question 8

***2–120.** Determine the magnitude of the projected component of force $\mathbf{F}_{AB}$ acting along the z axis.

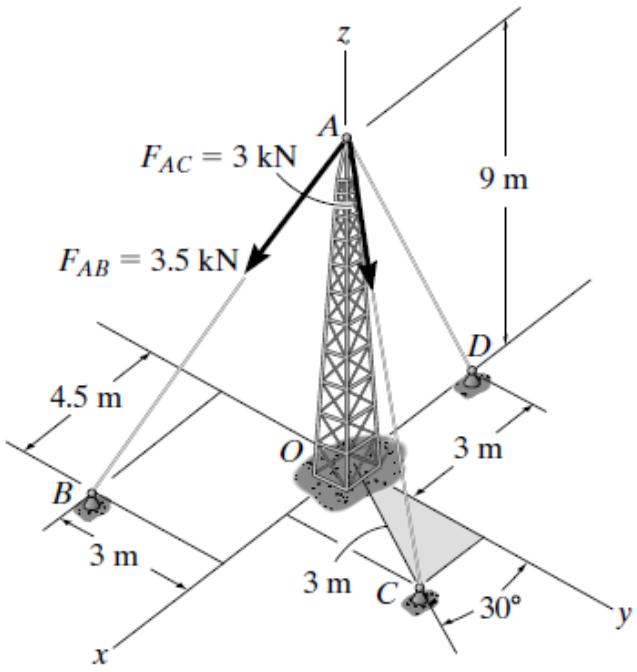


Figure Q8