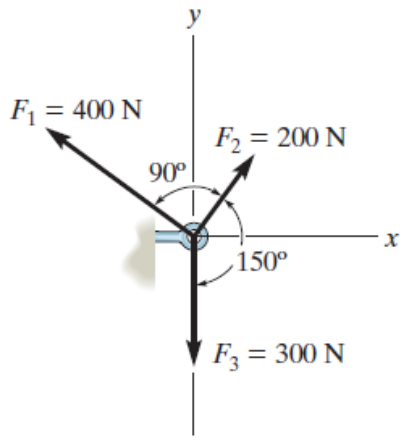
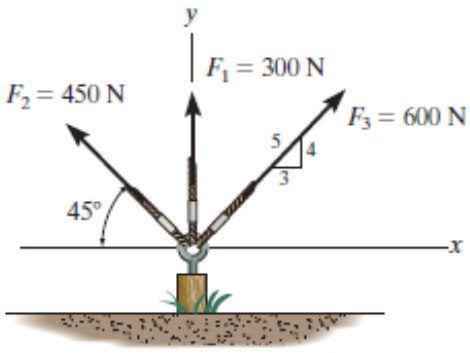
PS #1	K.T.Ü. MINING ENGINEERING ENGINEERING MECHANIS PROBLEM SET #1

1



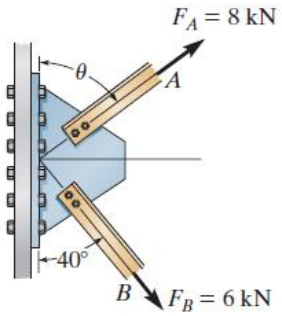
Find the resultant of the forces shown in the figure and determine the angle by which the x-component deviates from the x-axis in the counterclockwise direction.

2



Find the resultant of the forces shown in the figure and determine the angle by which the x-component deviates from the x-axis in the counterclockwise direction.

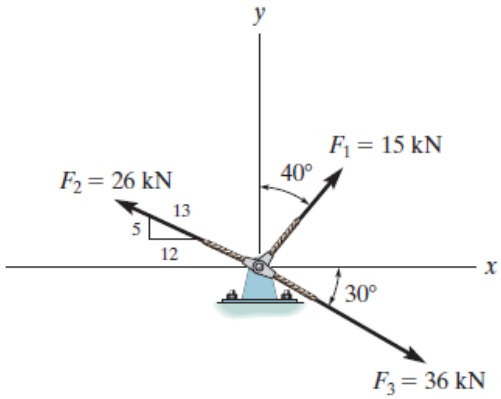
3



a) If $\theta = 60^o$, find the magnitude of the resultant and the angle it makes with the horizontal.

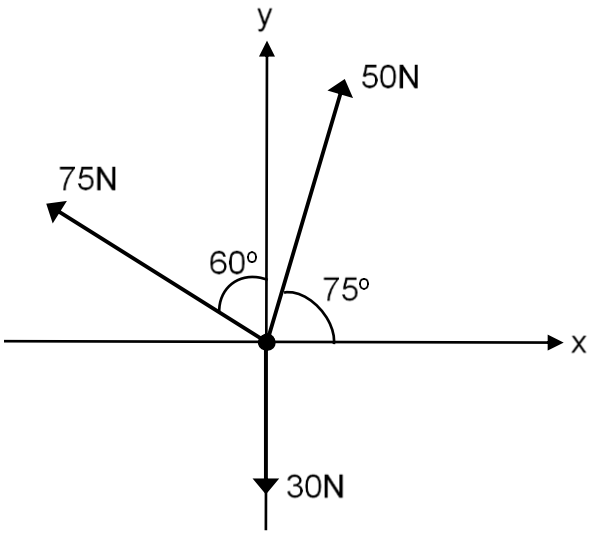
b) What should be the angle θ for the resultant to be horizontal?

4



Find the resultant of the forces shown in the figure and determine the angle by which the x-component deviates from the x-axis in the counterclockwise direction.

5

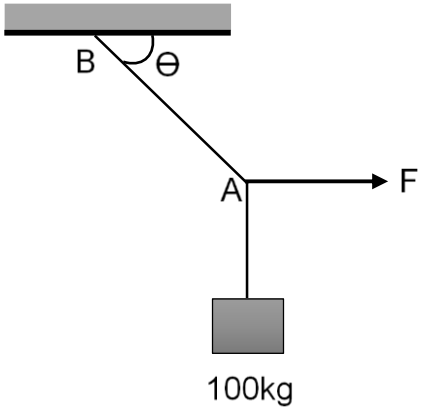


For the force system given in the figure:

a) Find the resultant.

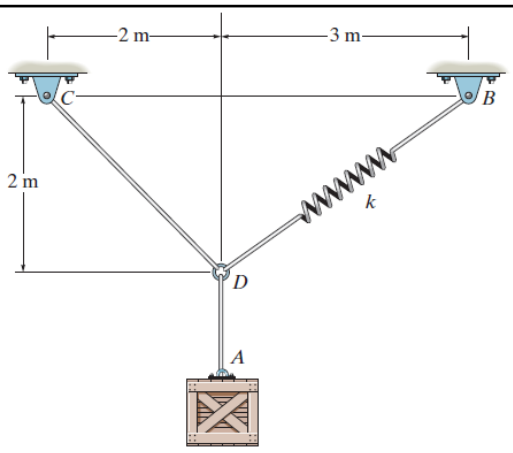
b) Determine the fourth force that needs to be added for the system to be in equilibrium.

6



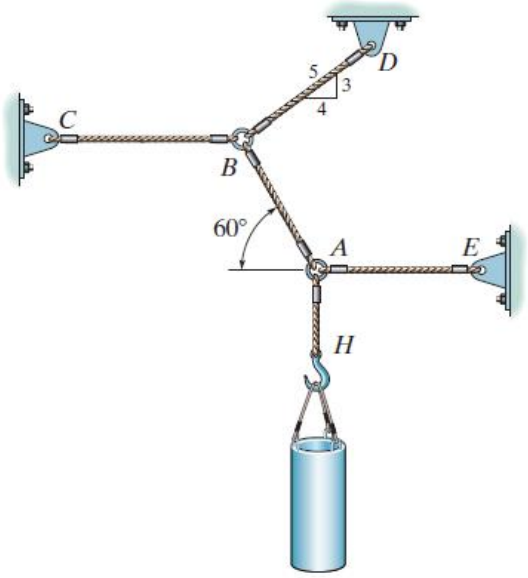
A 100 kg mass box is balanced by ropes and a force F. Since the AB rope can withstand a maximum force of 2000 N, calculate the minimum value that θ can take and determine the magnitude of force F for this value of θ.

7



Given that the box weighs 40 kg, determine the initial length of the spring DB. k = 180 N/m (spring constant)

8



Find the tension forces in the ropes. The weight of the pipe at H is 150 kg.