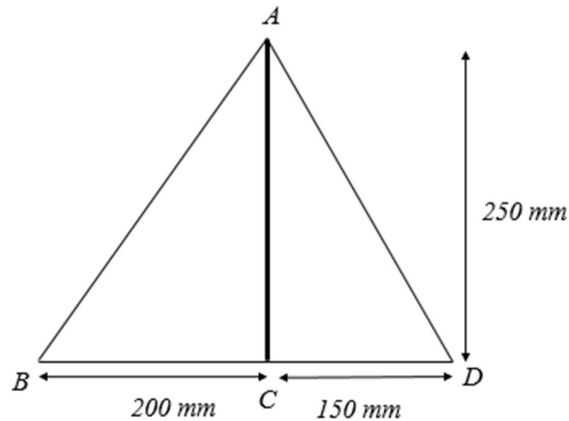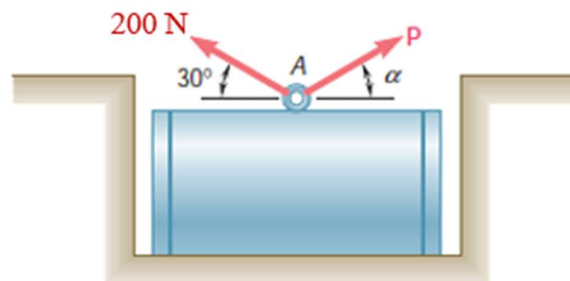## 01- Statics of Particles

Problem 1:
The pole AC is supported by the cables AB and AD. Tension along AB and AD is 50 and 20 kgf respectively. Determine the magnitude of the resultant forces applied to A.

Problem 2:
A tank has to be placed in an excavation with $\alpha = 20^0$. Determine the magnitude of the force **P**, if the resultant **R** of the two forces applied at A is to be vertical.
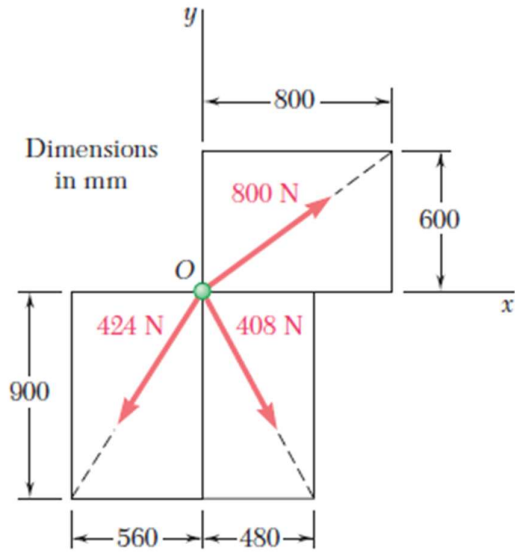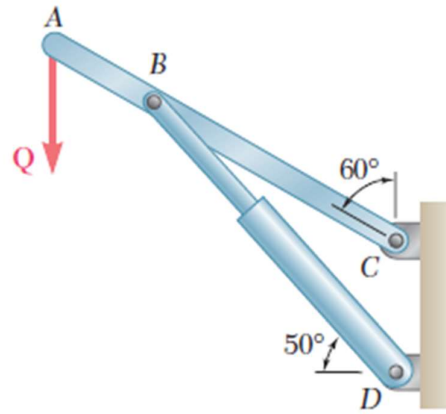

Problem 3:
Determine the x and y component of each of the forces shown in the figure of this problem.

Problem 4:
The hydraulic cylinder BD exerts force **P** on ABC along line BD. It is given, **P** has a component of 750 N perpendicular to ABC. Determine the magnitude of **P** and the component parallel to ABC.
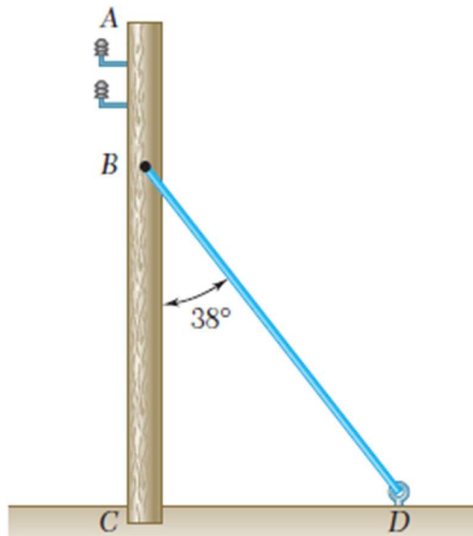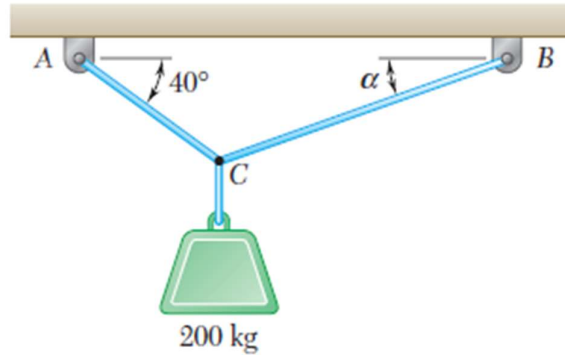
Problem 3

Problem 4

Problem 5:

A wire BD exerts force **P** on AC along line BD. It is known **P** has a component of 120 N perpendicular to AC. Determine the magnitude of **P** and its component along line AC.

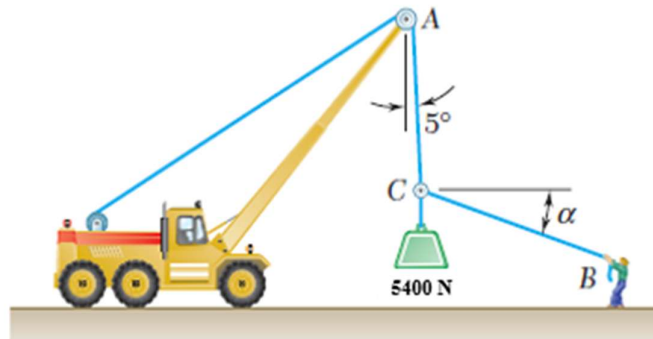**Problem 6:**
Two cables AC and BC are tied together at point C. It is given that $\alpha = 20\,^0$, Determine the tension in cable AC and BC.

200 kg

Problem 7:

Determine the tension in cable AC and rope BC. Given $\alpha = 20^0$.
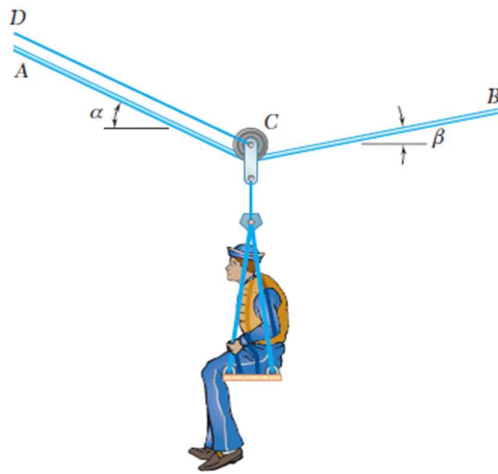

Problem 8:

A sailor is rescued using a chair that is suspended from a pulley that can roll freely on the support cable ACB and is pulled at a constant speed by cable CD. Given $\alpha = 30^0$, $\beta = 10^0$ and the total weight of chair and sailor is 900 N. Determine the tension in support cable ACB and cable CD.
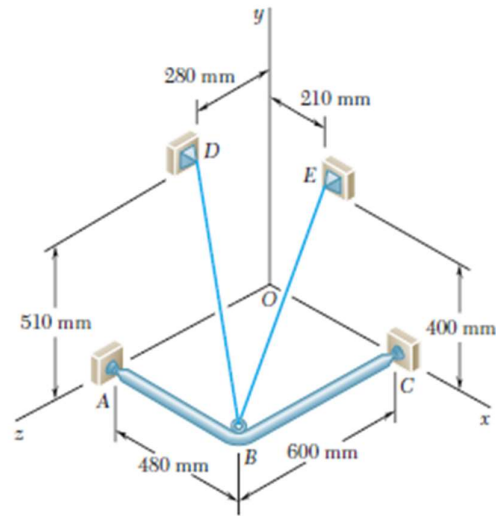
Problem 9:

Frame ABC is supported by cable DBE that passes through a frictionless ring at B. Given, the tension in cable DBE is 385 N. Determine the component of the force exerted at the support D by the cable DBE.
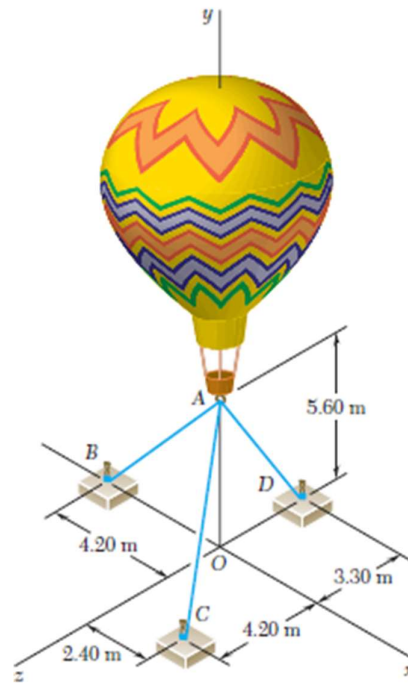
Problem 10:

 Three cables AC, AD and AB are used to tie balloon as shown. Given the tension in cable AC is 444 N. Determine the vertical force **P** exerted by balloon at A.

Problem 8

Problem 9

Problem 10
Reference: Figures and questions are adapted from Vector mechanics for engineers. Statics
and dynamics / Ferdinand Beer . . . [et al.]. — 9th ed.