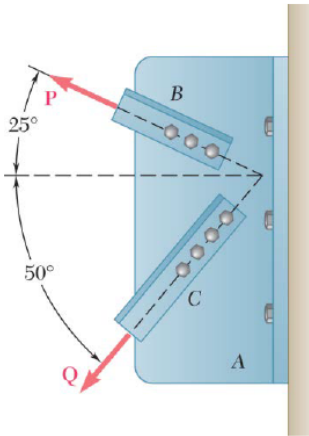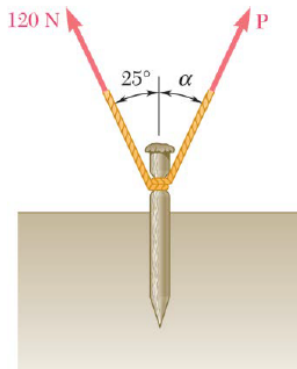Hw Assignment # 1.

Chapter 2.)

Problems
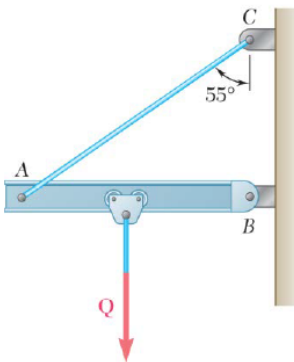
PROBLEM 2.3

Two structural members B and C are bolted to bracket A. Knowing that both members are in tension and that P = 10 kN and Q = 15 kN, determine graphically the magnitude and direction of the resultant force exerted on the bracket using (*a*) the parallelogram law, (*b*) the triangle rule.
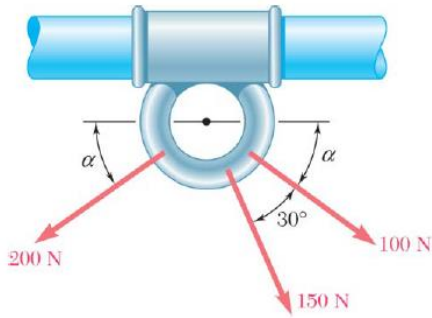
PROBLEM 2.5

A stake is being pulled out of the ground by means of two ropes as shown. Knowing that α = 30°, determine by trigonometry (*a*) the magnitude of the force **P** so that the resultant force exerted on the stake is vertical, (*b*) the corresponding magnitude of the resultant.
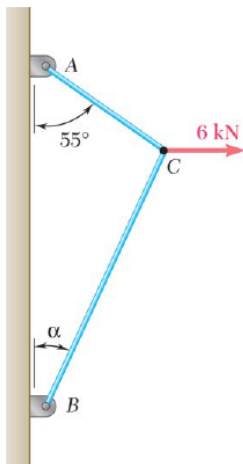
PROBLEM 2.28

Cable AC exerts on beam AB a force **P** directed along line AC. Knowing that **P** must have a 350-lb vertical component, determine (*a*) the magnitude of the force **P**, (*b*) its horizontal component.

PROBLEM 2.35

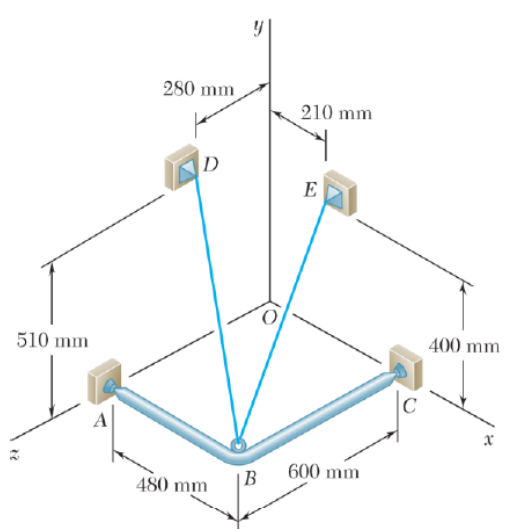Knowing that $\alpha = 35°$, determine the resultant of the three forces shown.

PROBLEM 2.44

Two cables are tied together at C and are loaded as shown. Knowing that $\alpha = 30°$, determine the tension (a) in cable AC, (b) in cable BC.
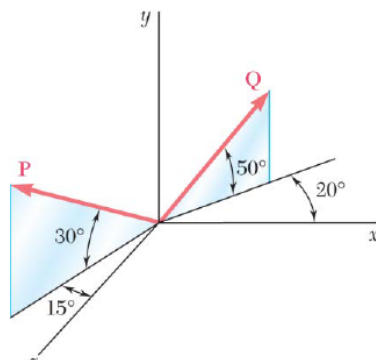
PROBLEM 2.80

Determine the magnitude and direction of the force $\mathbf{F} = (320 \text{ N})\mathbf{i} + (400 \text{ N})\mathbf{j} - (250 \text{ N})\mathbf{k}$.

PROBLEM 2.85

280 mm

210 mm

D

E

510 mm

O

400 mm

A

C

480 mm B 600 mm

A frame *ABC* is supported in part by cable *DBE* that passes through a frictionless ring at *B*. Knowing that the tension in the cable is 385 N, determine the components of the force exerted by the cable on the support at *D*.
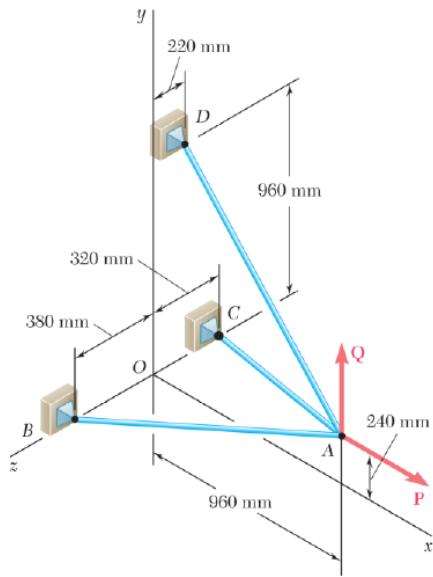
PROBLEM 2.91

Q

P

50°

20°

30°

15°

Find the magnitude and direction of the resultant of the two forces shown knowing that $P = 300$ N and $Q = 400$ N.

PROBLEM 2.107

Three cables are connected at A, where the forces **P** and **Q** are applied as shown. Knowing that $Q = 0$, find the value of P for which the tension in cable AD is 305 N.

220 mm

D

960 mm

320 mm

380 mm

C

O

Q

B

240 mm

A

960 mm

P

y

x

PROBLEM 2.134

Knowing that the tension in cable AC is 2130 N, determine the components of the force exerted on the plate at C.

360 mm

920 mm

A

O

B

x

y

600 mm D

900 mm

C