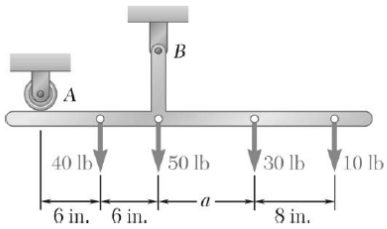
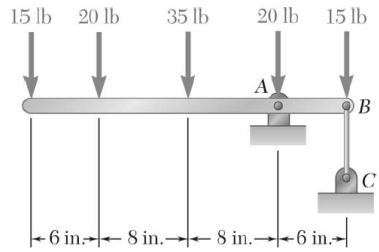


PROBLEM 4.3

A T-shaped bracket supports the four loads shown. Determine the reactions at A and B (a) if $a = 10$ in., (b) if $a = 7$ in.

Ans. (a) ***A***=20 lb ↓, ***B***=150 lb ↑

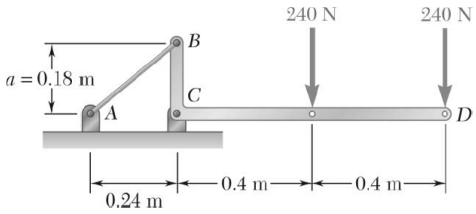
(b) ***A***=10 lb ↓, ***B***=140 lb ↑



PROBLEM 4.8

For the beam and loading shown, determine (*a*) the reaction at *A*, (*b*) the tension in cable *BC*.

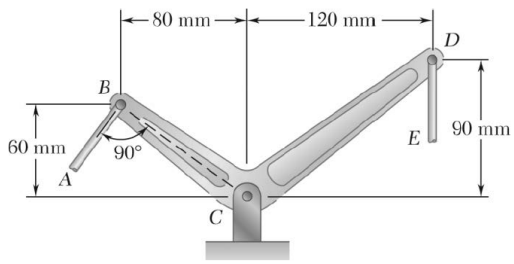
Ans. (a) $\boldsymbol{A}$=245 lb ↑, (b) F_{BC}=140 lb



PROBLEM 4.15

The bracket *BCD* is hinged at *C* and attached to a control cable at *B*. For the loading shown, determine (*a*) the tension in the cable, (*b*) the reaction at *C*.

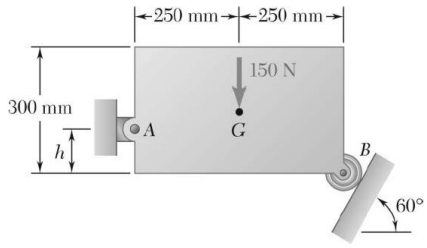
Ans. (a) T=2.4 kN, (b) C_x=1.60 kN →, C_y=1.68 kN ↑, $\mathbf{C}$=2.32 kN ∠ 46.4°



PROBLEM 4.19

Two links AB and DE are connected by a bell crank as shown. Knowing that the tension in link AB is 720 N, determine (a) the tension in link DE, (b) the reaction at C.

Ans. (a) F_{DE}=600 N, (b) $\mathbf{C}$=1253 N $\measuredangle$ 69.9°

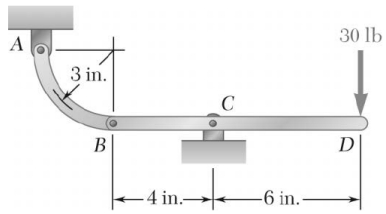


PROBLEM 4.23

Determine the reactions at A and B when (a) $h = 0$, (b) $h = 200$ mm.

<u>Ans.</u> (a) ***B***=150 N 30.0°, ***A***=150 N 30.0°

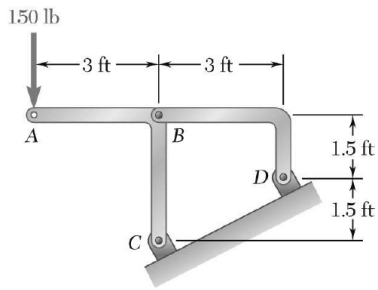
(b) ***B***=488 N 30.0°, ***A***=433 N 12.55°



PROBLEM 4.65

For the frame and loading shown, determine the reactions at A and C.

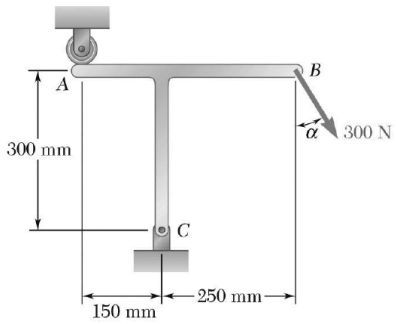
(2-force member) Ans. ***A***=63.6 lb ↖ 45.0°, ***C***=87.5 lb ↗ 59.0°



PROBLEM 4.66

For the frame and loading shown, determine the reactions at C and D.

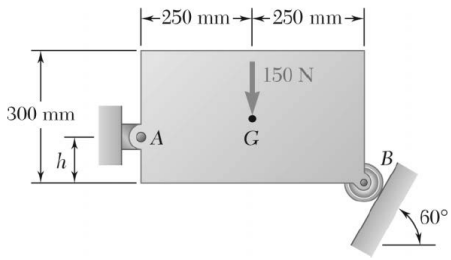
(2-force member) Ans. ***C***=270 lb ↘ 56.3º, ***D***=167.7 lb ↖ 26.6º



PROBLEM 4.69

A T-shaped bracket supports a 300-N load as shown. Determine the reactions at A and C when $\alpha = 45°$.

(3-force member) Ans. ***A***=778 N, ***C***=1012 N ∠ 77.9º



PROBLEM 4.79

Using the method of Section 4.7, solve Problem 4.23.

PROBLEM 4.23 Determine the reactions at A and B when (a) $h = 0$, (b) $h = 200$ mm.

(3-force member) <u>Ans.</u> (a) ***B***=150 N 30.0°, ***A***=150 N 30.0°

(b) ***B***=488 N 30.0°, ***A***=433 N 12.55°