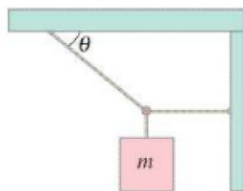
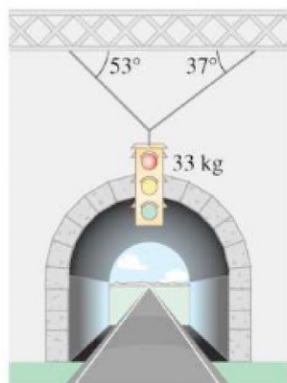


11. (II) Find the tension in the two cords shown in Fig. 9–45. Neglect the mass of the cords, and assume that the angle  $\theta$  is  $33^\circ$  and the mass  $m$  is 170 kg.



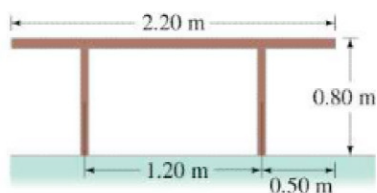
**FIGURE 9–45**  
Problem 11.

12. (II) Find the tension in the two wires supporting the traffic light shown in Fig. 9–46.



**FIGURE 9–46**  
Problem 12.

13. (II) How close to the edge of the 20.0-kg table shown in Fig. 9–47 can a 66.0-kg person sit without tipping it over?



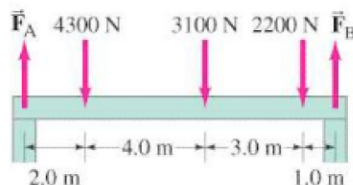
**FIGURE 9–47** Problem 13.

14. (II) A 0.60-kg sheet hangs from a massless clothesline as shown in Fig. 9–48. The clothesline on either side of the sheet makes an angle of  $3.5^\circ$  with the horizontal. Calculate the tension in the clothesline on either side of the sheet. Why is the tension so much greater than the weight of the sheet?



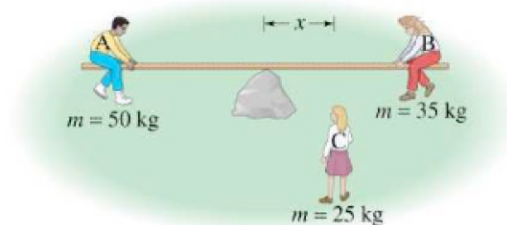
**FIGURE 9–48** Problem 14.

15. (II) Calculate  $F_A$  and  $F_B$  for the beam shown in Fig. 9–49. The downward forces represent the weights of machinery on the beam. Assume the beam is uniform and has a mass of 250 kg.



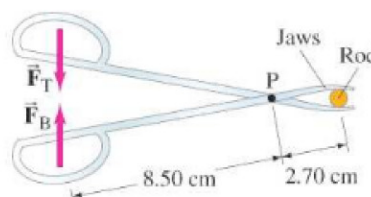
**FIGURE 9–49**  
Problem 15.

16. (II) Three children are trying to balance on a seesaw, which consists of a fulcrum rock, acting as a pivot at the center, and a very light board 3.6 m long (Fig. 9–50). Two playmates are already on either end. Boy A has a mass of 50 kg, and girl B a mass of 35 kg. Where should girl C, whose mass is 25 kg, place herself so as to balance the seesaw?



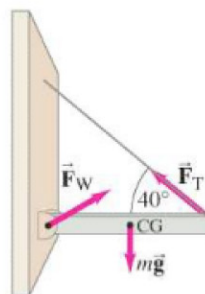
**FIGURE 9–50** Problem 16.

17. (II) Figure 9–51 shows a pair of forceps used to hold a thin plastic rod firmly. If each finger squeezes with a force  $F_T = F_B = 11.0$  N, what force do the forceps jaws exert on the plastic rod?



**FIGURE 9–51**  
Problem 17.

18. (II) Calculate (a) the tension  $F_T$  in the wire that supports the 27-kg beam shown in Fig. 9–52, and (b) the force  $\vec{F}_W$  exerted by the wall on the beam (give magnitude and direction).



**FIGURE 9–52**  
Problem 18.

19. (II) A 172-cm-tall person lies on a light (massless) board which is supported by two scales, one under the top of her head and one beneath the bottom of her feet (Fig. 9–53). The two scales read, respectively, 35.1 and 31.6 kg. What distance is the center of gravity of this person from the bottom of her feet?



**FIGURE 9–53** Problem 19.