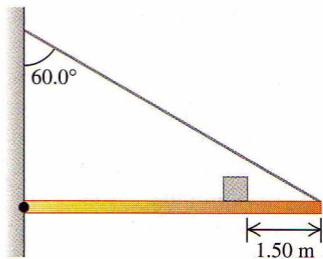


38. ●● Two people are carrying a uniform wooden board that is 3.00 m long and weighs 160 N. If one person applies an upward force equal to 60 N at one end, at what point and with what force does the other person lift? Start with a free-body diagram of the board.

44. ● A uniform 250 N ladder rests against a perfectly smooth wall, making a 35° angle with the wall. (a) Draw a free-body diagram of the ladder. (b) Find the normal forces that the wall and the floor exert on the ladder. (c) What is the friction force on the ladder at the floor?

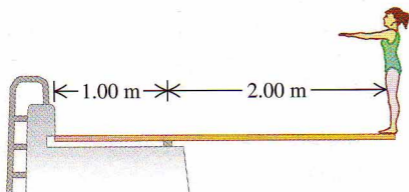
47. ●● A uniform beam 4.0 m long and weighing 2500 N carries a 3500 N weight 1.50 m from the far end, as shown in Figure 10.63. It is supported horizontally by a hinge at the wall and a metal wire at the far end. (a) Make a free-body diagram of the beam. (b) How strong does the wire have



▲ **FIGURE 10.63** Problem 47.

to be? That is, what is the minimum tension it must be able to support without breaking? (c) What are the horizontal and vertical components of the force that the hinge exerts on the beam?

49. ●● A diving board 3.00 m long is supported at a point 1.00 m from the end, and a diver weighing 500 N stands at the free end (Fig. 10.65). The diving board is of uniform cross section and weighs 280 N. Find (a) the force at the support point and (b) the force at the left-hand end.



▲ **FIGURE 10.65** Problem 49.