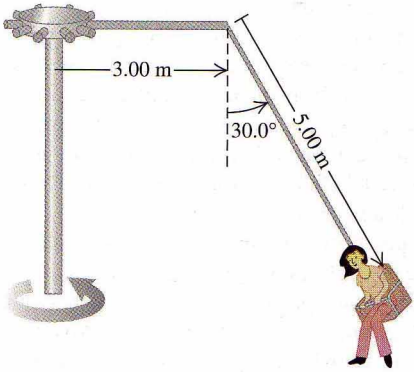
4. • A flat (unbanked) curve on a highway has a radius of 220 m. A car rounds the curve at a speed of 25.0 m/s. (a) Make a free-body diagram of the car as it rounds this curve. (b) What is the minimum coefficient of friction that will prevent sliding?

5. •• The "Giant Swing" at a county fair consists of a vertical central shaft with a number of horizontal arms attached at its upper end. (See Figure 6.26.) Each arm supports a seat suspended from a 5.00-m-long rod, the upper end of which is fastened to the arm at a point 3.00 m from the central shaft. (a) Make a free-body diagram of the seat, including the person in it. (b) Find the time of one revolution of the swing if the rod supporting the seat makes an angle of 30.0° with the vertical. (c) Does the angle depend on the weight of the passenger for a given rate of revolution?



▲ **FIGURE 6.26** Problem 5.

17. • What gravitational force do the two protons in the helium nucleus exert on each other? Their separation is approximately 1.0 fm. (Consult Appendix E and Table 1-1.)

20. • A 2150 kg satellite used in a cellular telephone network is in a circular orbit at a height of 780 km above the *surface* of the earth. What is the gravitational force on the satellite? What fraction is this force of the satellite's weight at the surface of the earth?