

6A

A crate of weight  $F_g$  is pushed by a force  $\vec{P}$  on a horizontal floor. (a) The coefficient of static friction is  $\mu_s$ , and  $\vec{P}$  is directed at angle  $\theta$  below the horizontal. Show that the minimum value of  $P$  that will move the crate is given by

$$P = \frac{\mu_s F_g \sec \theta}{1 - \mu_s \tan \theta}$$

6B

A plumb bob does not hang exactly along a line directed to the center of the Earth's rotation. How much does the plumb bob deviate from a radial line at  $35.0^\circ$  north latitude? Assume the Earth is spherical.

6C

A  $0.500\text{-kg}$  object is suspended from the ceiling of an accelerating boxcar as shown in Figure 6.12. Taking  $a = 3.00 \text{ m/s}^2$ , find (a) the angle that the string makes with the vertical and (b) the tension in the string.

