PHYS 1210 Worksheet: Force and Acceleration

1. A crate of ice skates with a total mass of 35.0 kg initially at rest on a warehouse floor receives a horizontal net force of 14.0 N.
   a. What is the acceleration of the crate?
   b. How far does the crate travel in 10.0 s?
   c. What is the speed of the crate at the end of 10.0 s?

2. Draw a free body diagram for a toy frog on a string traveling in a horizontal circle.

3. A bowl of petunias of mass m accelerates in free fall at g downward. What is the magnitude of the net force acting on the bowl?

4. A 1,500-kg car rides on rubber tires that have a coefficient of kinetic friction on dry pavement of $\mu_k = 0.80$. It locks wheels and skids.
   a. What is the magnitude of the force of friction on the car?
   b. What is the car's acceleration?
   c. A 20,000-kg truck with tires of the same rubber and μ_k locks wheels and skids. What is its acceleration?