**Name**_____

**Date** _____ **Pd**____

# UNIT I: Worksheet 3

For each of the problems below, you *must* begin your solution with a force diagram and a sum of the forces equation.

1. A 100. N force is applied to a 50. kg crate resting on a level floor. If the force of friction is 75N, what is the acceleration of the crate?

2. A 4600 kg helicopter accelerates upward at 2.0 $m/s^2$. What lift force is exerted by the air on the propellers?

3. The maximum force that a grocery bag can withstand without ripping is 250 N. Suppose that the bag is filled with 20. kg of groceries and lifted with an acceleration of 5.0 $m/s^2$. Do the groceries stay in the bag?

4. A student, standing on a scale in an elevator at rest, sees that the scale reads 840 N.
   a. What is the mass of the student?

   b. As the elevator rises, he notices that the scale reading increases to 1050 N. Determine the acceleration at the beginning of the trip.

5. During the middle part of the elevator ride the scale reads 840N. What is the acceleration during the middle portion?

6. While the elevator slows to a stop at the 10th floor the scale reading drops to 588 N. What is the acceleration of the elevator while coming to a stop?