Worksheet: Non-Free Fall **Name____________________**

1. Air resistance is a ________________ acting on a moving object. If the object is falling, air resistance acts (upward, downward).

2. As a falling object gains speed, the force of air resistance (increases, decreases) until F_{air} = the ______________ of the object. When this happens, the net, external force acting on the object equals _________ and the object no longer __________________. We say that the object has reached _________________ ______________________. Now the object's motion will be __________________ until it hits the ground.

3. An object weighing 10 N is in ***free fall***. The net force acting on the object = _____________. The object accelerates at __________m/s^2. When the object encounters 4 N of air resistance, the net force will be _____________. Now the object's acceleration will be (greater than, less than, equal to) 9.80 m/s^2.

   When the object encounters 10 N of air resistance, the net force will be _____________. Now the object's acceleration will be ____________.

4. If Galileo had dropped a rock and a feather together off the tower, the __________________ would have reached the ground first. Use the idea of "terminal velocity" to explain why.

Problems on Back -

Worksheet: Non-Free Fall **Name___________________**

Problems Involving Two Forces Acting on an Object:

1. A box with a weight of 22 N falls through the air with a wind resistance of 14 N.
   a. Draw a diagram showing both forces acting on the box.

   b. What is the net force acting on the box?

   c. Calculate the mass of the box.

   d. Use Newton's 2nd Law to calculate the acceleration of the box.

2. A bucket of water weighing 110 N is being lifted by person pulling upward on a rope with a force of 130 N.
   a. Draw a diagram of the two forces acting on the bucket.

   b. What is the net force on the bucket?

   c. Calculate the mass of the bucket.

   d. Use Newton's 2nd Law to calculate the acceleration of the bucket.