Physics 11 **Hooke's Law Worksheet #1** Name:

For each of the problems below, draw a diagram of the situation before answering the question:

1. An rubber band is stretched from its resting position a distance of 0.1 m. If the spring constant is k = 2.5 N/m, what is the force being exerted on the rubber band?

2. If a spring is stretched a distance of 0.25 m with a force of 20 N, what is the value of the spring constant k?

3. If the spring constant k of a pogo stick is 3500 N/m and the weight of the person on the pogo stick is 700 N, how much is the spring in the bottom of the pogo stick compressed?

4. A 20 kg cart on wheels has been pushed up against a wall with a spring (k = 244 N/m) between the wall and the cart. If the spring is compressed a distance of 0.1m and a force of 20 N is continued to be applied toward the wall, what will the acceleration of the object be?

5. A box having a mass of 1.5 kg is accelerated across a table at 1.5 m/s2. The coefficient of friction on the box is 0.3. What is the force being applied to the box? If this force were applied by a spring, what would the spring constant have to be in order for the spring to be stretched to only 0.08 m while pulling the box?

6. A spring (k = 2.3 N/m) is attached to an object of mass = 10 kg. If the object is hung from the ceiling by this spring, how much would the spring be stretched?

7. If $\mu s = 0.5$, how much force must be applied to a spring (spring constant of 0.8 N/m) which is attached to a block of wood (mass = 4.0 kg) in order to just begin to move the block?