**Unit 5 - Worksheet 1**

**Quantitative Practice with *Un*balanced Forces**

For each problem, draw a diagram of the physical system. Define the system in your diagram with a dotted line around the object or objects that are in your system. Draw a well-labeled force diagram. Show all general equations in your solution.

1. A 2.00 kg cart on a frictionless track is pulled horizontally with a force of 3.00 N. What is the acceleration of the cart?
2. A shuffle board puck (400. g) slides across a wooden surface. If the puck has an acceleration of 0.500 m/s/s, determine the amount of the friction force?

**(Kinematics Review)** If the goal of the shot is to have the shuffleboard puck travel 10.5 meters, what initial velocity should the player give to the puck by pushing it?

1. In the above situation, if the shuffleboard player applied a force of 10N to the puck, *while pushing it*, what is the net force (F) acting on the puck?

1. What would the acceleration of the puck during ‘*pushing’* be under the conditions described in Question 3?

**(Kinematics Review)** How much time must the player apply this force (assumed constant) to produce the appropriate initial velocity described in Question 2.