Name: _____

Date: _____

Section C D F

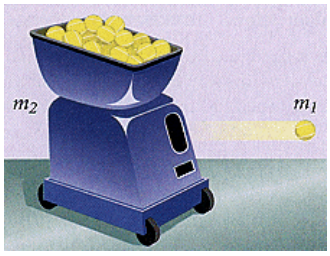
The Masters School DOBBS
Mr. Alex Rawson
Physics

Momentum III

1. Two carts with masses of 6.4 kg and 1.4 kg, respectively, move on a frictionless track with velocities of 5.0 m/s and 2.6 m/s. The carts stick together after colliding head-on. Find the final speed.

2. A 1750 kg car moving south at 14.5 m/s collides with a 2250 kg car moving north. The cars stick together and move as one unit after the collision at a velocity of 5.40 m/s to the north. Find the velocity of the 2250 kg car ***before*** the collision.

3. A tennis player places a 70 kg ball machine on a frictionless surface. The machine fires a 0.057 kg tennis ball horizontally with a velocity of 21 m/s toward the north. What is the final velocity of the machine? Give at least 4 decimal places in your answer.



4. A 65.0 kg ice skater moving forward with a velocity of 1.40 m/s throws a 0.160 kg snowball forward with a velocity of 20.0 m/s.

    a. What is the velocity of the ice skater after throwing the snowball? Disregard the friction between the skates and the ice.

    b. A second skater initially at rest with a mass of 60.0 kg catches the snowball. What is the velocity of the second skater after catching the snowball in a perfectly inelastic collision?