**Impulse Momentum WS 2**

1. A 450 kg racecar slowed from 30m/s to 15 m/s. What was its change in momentum?
2. If the car in the above problem took 5 seconds to slow down from 42m/s to 15 m/s.
   1. What is the impulse?
   2. What was the average force applied by the brakes?
3. A truck hits another car with a force of 1675 N. The collision takes 2.0 seconds.

a. What is the impulse of the impact?

b. What is the change in momentum of the truck?

c. If the truck has a mass of 1342 kg and was moving at a speed of 20 m/s, what is the new speed of the truck?

d. If the car has a mass of 1205 kg and an initial velocity of 0 m/s, what is the final velocity of the car?

1. A 250 g tennis ball travelling at 18 m/s is returned by Sam. It leaves his racket with a speed of 31 m/s in the opposite direction from which it came.
   1. What is the change in momentum of the tennis ball?
   2. The ball was in contact with the racket for 0.027 seconds. What is the average force applied by Sam during the hit?

5. Con Cussion plays middle linebacker for the varsity football team. In his last game he delivered a hit to Zig Zag, an 47-kg running back, changing his southward velocity of 6.3 m/s into a northward velocity of 3.5 m/s.

**a.** If C-C has a mass of 68 Kg, what was his initial velocity?

6. A 74-kg male holding a 42-kg female are a figure skating team gliding across the ice at 6.0 m/s , preparing for a throw jump maneuver. The male skater tosses the female skater forward with a speed of 9.4 m/s. Determine the speed of the male skater immediately after the throw.

7. A child throws a doll with a speed of 2 m/s into a 3.6 kg wagon that is moving at 6m/s. After the collision, the doll and the wagon are moving together with a velocity of 4.2 m/s. Determine the mass of the doll.