# Physics 11 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Momentum Practice Test

1. What impulse is required to change the velocity of a 2.0 kg object from 2.0 m/s east to 5.0 m/s east?

2. A 0.2 kg ball is hit by a bat, and the collision lasts for 0.185 s. If the ball is originally moving at 32.0 m/s north and is moving at 38.0 m/s south after the collision, what average force was exerted on the ball?

3. A 1200 kg car travelling east at 22.5 m/s collides with a 4500 kg truck travelling west at 14.5 m/s. The vehicles stick together after the collision. What is the velocity of the combined vehicles after the collision?

4. A 2050 kg train car moving at 2.0 m/s hits an identical stationary train car. After the collision the two cars move off seperately with the second car moving at 1.5 m/s. How fast is the first car moving?

5. A 2.5 kg bird is flying due south at 12.0 m/s. It is hit by a 0.45 kg baseball moving at 21.0 m/s northward. The ball is caught by the bird. What is the combined velocity of the ball and the bird after the collision?

1. 2.2 kg pendulum is lifted to 3.5 m above its lowest point.
   1. Draw a diagram of this. (1 mark)
   2. How fast is it moving after it has fallen to 0.80 m above its lowest point? (ignore friction) (4 marks)
   3. After 10 swings, the pendulum is moving at 3.25 m/s at the lowest point. How much energy was lost to friction? (4 marks)