

Name: _____ Period: _____

Momentum and Impulse Problems

1.
 - a. What is the momentum of an 8 kg bowling ball rolling at 8 m/s?

 - b. If the bowling ball rolls into a pillow and stops in 0.5 seconds, calculate the force the pillow exerts on the bowling ball.

2.
 - a. What Impulse occurs when a force of 10 Newtons is exerted on a cart for 2.5 seconds?

 - b. What change in momentum does the cart undergo?

3. A 1000 kg car moving at 20 m/s slams into a building and comes to a halt. Consider questions **a** and **b** below. Which question can be answered using the given information and which one cannot be answered? Explain.
 - a. What impulse acts on the car?

 - b. What is the force of impact on the car?

4. A car with a mass of 1000 kg moves at 20 m/s. What force is needed to bring the car to a halt in 10 seconds?

5. Assume an 8 kg bowling ball moving at 2 m/s bounces off a spring at the same speed that it had before bouncing.
 - a. What is the momentum of recoil (bouncing back)?

 - b. What is the changing in momentum?

 - c. If the interaction with the spring occurs in 0.5 seconds, calculate the force the spring exerts on it.