Momentum Problems

1. The linear momentum of an object can be calculated by multiplying the mass of the object by its _____.
a. acceleration
b. impulse
c. velocity
d. time

2. The greatest change in momentum will be produced by a _____.
a. large force action over a long time
b. small force acting over a short time.
c. large force action over a short time

3. When a bowling ball hits a pin, the change in momentum of the ball is _____ the change in momentum of the pin.
a. equal to
b. greater than
c. less than
d. not related to

4. The impulse needed to stop an object is _____ the change in momentum of the object.
a. equal to
b. greater than
c. less than
d. not related to

5. The impulse of an object can be calculated by $F\Delta t$. In this equation, F stands for _____ and Δt stands for _____.

6. What is the momentum of a 57 g tennis ball traveling at 40.0 m/s? (change from grams to kilograms)

7. What impulse is needed to stop a 5 kg bowling ball traveling at a velocity of -3.5 m/s?

8. A force of 800 N is used to stop an object with a mass of 50 kg moving with a velocity of 35 m/s. How long will it take to stop this object?

9. A hockey player hits a 180 g hockey puck, initially at rest, giving it an impulse of 6.0 N.s. What speed is the puck now moving toward the goal?

10. A 2.0 kg egg drop package falls toward the ground with a speed of 10.0 m/s. When it hits the ground it stops in 0.0070 s. What is the average force on the package while it is stopping?

Answers
1. C
2. A
3. A
4. A
5. Force; time elapsed
6. 2.28 kg*m/s
7. 17.5 N*s
8. 2.19 s
9. 33.3 m/s
10. 2860 N