Name:_____ Class:_____ Date:_____

Assessment

Momentum and Collisions

Section Quiz: Momentum and Impulse

Write the letter of the correct answer in the space provided.

_____ 1. What is the product of an object's mass and its velocity?
a. kinetic energy
b. momentum
c. impulse
d. inertia

_____ 2. Which of the following has the greatest momentum?
a. a 4.0 kg bowling ball moving at 2.0 m/s
b. a 0.15 kg baseball moving at 10.0 m/s
c. a 1.6×10^3 kg car moving at 0.5 m/s
d. a 0.02 kg bullet moving at 950 m/s

_____ 3. How does the momentum of an object change if the object's velocity doubles?
a. The momentum doubles.
b. The momentum increases by a factor of four.
c. The momentum decreases by a factor of 1/2.
d. The momentum decreases by a factor of 1/4.

_____ 4. What are the units of momentum?
a. N
b. J
c. kg•m/s
d. kg•m/s^2

_____ 5. Which of the following can determine the magnitude of the change in an object's momentum?
a. mass and acceleration
b. force and time interval
c. force and distance
d. acceleration and time interval

_____ 6. Which of the following is true of changes in momentum?
a. A small force may produce a large change in momentum by acting over a short time interval.
b. A small force may produce a large change in momentum by acting over a long distance.
c. A large force may produce a small change in momentum by acting over a short time interval.
d. A small force may produce a large change in momentum by acting on a very massive object.

_____ 7. If a net force acts on an object, then the object's momentum
   a. will increase.
   b. will decrease.
   c. will either increase or decrease.
   d. may or may not change.

_____ 8. Which of the following involves a change in momentum?
   a. A bowling ball rolls down the lane at constant speed.
   b. A car coasts down a hill at constant speed.
   c. A sky diver descends with terminal velocity.
   d. A spacecraft travels at constant speed while slowly losing mass.

9. Define impulse, and state the impulse-momentum theorem.

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10. A 1.0×10^4 kg spacecraft is traveling through space with a speed of 1200 m/s relative to Earth. A thruster fires for 120 seconds, exerting a continuous force of 25,000 N on the spacecraft in a direction opposite the spacecraft's motion. Calculate the initial momentum and the final momentum of the spacecraft.