1. What is the momentum of a 1,200-kilogram car traveling at 15 meters per second due east?
   (1) 1.8×10^4 kg•m/s due east
   (2) 1.8×10^4 kg•m/s due west
   (3) 80. kg•m/s due east
   (4) 80. kg•m/s due west

2. If a 3.0-kilogram object moves 10. meters in 2.0 seconds, its average momentum is
   (1) 60. kg-m/sec
   (2) 30. kg-m/sec
   (3) 15 kg-m/sec
   (4) 10. kg-m/sec

3. An object traveling at 4.0 meters per second has a momentum of 16 kilogram-meters per second. What is the mass of the object?
   (1) 64 kg
   (2) 20 kg
   (3) 12 kg
   (4) 4.0 kg

4. Two rocks weighing 5 Newtons and 10 Newtons, respectively, fall freely from rest near the Earth's surface. After 3 seconds of free-fall, compared to the 5-newton rock, the 10-newton rock has greater
   (1) acceleration
   (2) height
   (3) momentum
   (4) speed

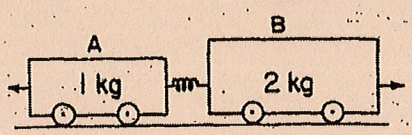
5. A 0.60-kilogram softball initially at rest is hit with a bat. The ball is in contact with the bat for 0.20 second and leaves the bat with a speed of 25 meters per second. What is the magnitude of the average force exerted by the ball on the bat?
   (1) 8.3 N
   (2) 15 N
   (3) 3.0 N
   (4) 75 N

6. As the unbalanced force applied to an object increases, the time rate of change of the object's momentum
   (1) decreases
   (2) increases
   (3) remains the same

7. A 1.5-kilogram lab cart is accelerated uniformly from rest to a speed of 2.0 meters per second in 0.50 second. What is the magnitude of the force producing this acceleration?
   (1) 0.70 N
   (2) 1.5 N
   (3) 3.0 N
   (4) 6.0 N

8. A 20.-kilogram mass moving at a speed of 3.0 meters per second is stopped by a constant force of 15 Newtons. How many seconds must the force act on the mass to stop it?
   (1) 0.20 sec
   (2) 1.3 sec
   (3) 5.0 sec
   (4) 4.0 sec

9. Base your answer to the following question on the diagram below which represents carts *A* and *B* being pushed apart by a spring which exerts an average force of 50. Newtons for a period of 0.20 second. [Assume friction-less conditions.]



   What is the magnitude of the impulse applied by the spring on cart *A*?
   (1) 5.0 N-sec
   (2) 10. N-sec
   (3) 50. N-sec
   (4) 100 N-sec

10. If a net force of 10. Newtons acts on a 6.0-kilogram mass for 8.0 seconds, the total change of momentum of the mass is
    (1) 48 kg·m/s
    (2) 60. kg·m/s
    (3) 80. kg·m/s
    (4) 480 kg·m/s

$J = Ft = \Delta p$

$F = \frac{\Delta p}{t}$