

2.7 Momentum Practice Problems

- Find the momentum of the following objects.
 - A 1000. kg car traveling 25. m/s.
 - A 2000. kg truck traveling 20. m/s.
 - A 75 kg person running 8.0 m/s
- How fast does an 80. kg person have to run to have the same momentum as a 100. kg person running 4.0 m/s?
- An air hockey puck ($m = 0.20$ kg) is traveling 4.0 m/s when it hits a stationary puck that has the same mass.
 - What is the initial momentum of the first puck?
 - What is the total momentum of the system before the collision?
 - What is the total momentum of the system after the collision?
 - If the first puck stops, what is the final momentum of the second puck?
 - What is the final velocity of the second puck?

4. An 80.0 kg running back was traveling 6.0 m/s before he gets hit. The 100.0 kg linebacker who hit him was running 4.5 m/s in the opposite direction.
 - a. What was the momentum of the running back before the collision?

 - b. What was the momentum of the linebacker before the collision?

 - c. What was the total momentum of the combination before the collision?

 - d. Assuming they stick together after the collision, what direction will the combination travel?

5. The driver of a 1000. kg car looked down to check the text message that came in and didn't see that a 2000. kg truck in front had stopped.
 - a. After the collision, the truck travelled 10.0 m/s. What was the final momentum of the truck?

 - b. After the collision, the car travelled 2.0 m/s. What was the final momentum of the car?

 - c. What was the final momentum of the combination?

 - d. What was the initial momentum of the combination?

 - e. How fast was the car traveling before the collision?