

Name: _____

Date: _____

4. During practice, a student kicks a 0.40 kg soccer ball with a velocity of 8.5 m/s to the south into a 0.15 kg bucket lying on its side. The bucket travels with the ball after the collision.
 - a. What is the final velocity of the combined mass?
 - b. What is the decrease in kinetic energy during the collision?

5. A 0.015 kg marble sliding to the right at 22.5 cm/s on a frictionless surface makes an elastic head-on collision with a 0.015 kg marble moving to the left at 18.0 cm/s. After the collision, the first marble moves to the left at 18.0 cm/s.
 - a. Find the velocity of the second marble after the collision.
 - b. Verify your answer by calculating the total kinetic energy before and after the collision.

6. A 16.0 kg canoe moving to the left at 12.5 m/s makes an elastic head-on collision with a 14.0 kg raft moving to the right at 16.0 m/s. After the collision, the raft moves to the left at 14.4 m/s. Disregard any effects of the water.
 - a. Find the velocity of the canoe after the collision.
 - b. Verify your answer by calculating the total kinetic energy before and after the collision.