Checkout Questions

Lab 18. Elastic and Inelastic Collisions: Which Properties Are Conserved During a Collision?

1. In your investigation, the kinetic energy of the system before the collision was greater than the kinetic energy of the system after the collision. Did your investigation violate the law of conservation of energy?

   a. Yes, it violated the law of conservation of energy.
   b. No, it did not violate the law of conservation of energy.

   Explain why or why not.

   Use the following information to answer questions 2 and 3. A truck has a mass of 5,000 kg and is moving to the right at 10 m/s. A small car has a mass of 2,000 kg and is moving to the left at 20 m/s. The two vehicles collide head on.

2. Is this collision elastic or inelastic?

   a. Elastic
   b. Inelastic

   How do you know?

3. What is the total momentum of the two-vehicle system before the collision?

   a. 10,000 kg·m/s
   b. 40,000 kg·m/s
   c. 50,000 kg·m/s
   d. 90,000 kg·m/s

   How do you know?

4. The terms *data* and *evidence* mean the same thing in science.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about collisions.

5. It is important to track how energy and matter move into, out of, and within a system and to determine if any of properties are conserved within the system.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about collisions.

6. In science, there is a difference between a law and a theory. What is the difference between a law and a theory? Explain why this distinction is important, using an example from your investigation about collisions.

7. Scientists often need to identify the system under study before they start collecting data. Explain why defining the system under study is so important in science, using an example from your investigation about collisions.