Poor Little Deer

Name: _____

Directions: Follow the procedure below. Perform any calculations that are
            required and answer any questions.

Story: A car was driving down the road. A deer jumped out in the middle of
          the road. The driver slammed on the brakes, but was unable to avoid
          hitting the deer. Follow the procedure below to reenact the accident
          and calculate the car's velocity, momentum, acceleration and force.

Procedure
1. Start the blue cart rolling from the start line.
2. Time how long it took the cart to get from the start line to the deer
    (wood block). Repeat steps 1 and 2 two more times and determine the
    average time.

    Trial #1: _____ Trial #2 _____ Trial #3 _____ Avg. _____

3. The distance the car traveled before it hit the deer was 70 cm. Using
    the average time from step 2, calculate the car's initial and final
    velocity.

    Initial velocity: _____   Final velocity: _____

4. Using the initial and final velocities, calculate the carts acceleration
    from the start time until it hit the deer.

    Acceleration: _____

5. Determine the mass of the cart using the electronic balance.

    Mass: _____

6. Knowing the velocity of the moving car and the car's mass, determine the momentum of the car before it hit the deer.

   Momentum: _____

7. What happened to the car's momentum when it hit the deer?

8. Explain why the deer moved using the term's net force, acceleration and mass.

9. What force was applied to the deer by the car? (Hint: use the mass of the cart and acceleration you determined earlier in the lab.)

10. What law describes what you just observed?