Base your answers to questions **1** and **2** on the information below.

An 8.00-kilogram ball is fired horizontally from a 1.00×10^3-kilogram cannon initially at rest. After having been fired, the momentum of the ball is 2.40×10^3 kilogram•meters per second east. [Neglect friction.]

1. Identify the direction of the cannon's velocity after the ball is fired.

2. Calculate the magnitude of the cannon's velocity after the ball is fired.

Part 2 Review P

Base your answers to questions **3** through **7** on the information below.

A manufacturer's advertisement claims that their $1,250$-kilogram ($12,300$-newton) sports car can accelerate on a level road from 0 to 60.0 miles per hour (0 to 26.8 meters per second) in 3.75 seconds.

3. Using the values for the forces you have calculated, explain whether or not the manufacturer's claim for the car's acceleration is possible.

4. The coefficient of friction between the car's tires and the road is 0.80. Calculate the maximum force of friction between the car's tires and the road. [Show all work, including the equation andsubstitution with units.]

5. What is the normal force exerted by the road on the car?

6. Calculate the net force required to give the car the acceleration claimed in the advertisement. [Show all work, including the equation and substitution with units.]

7. Determine the acceleration, in meters per second^2, of the car according to the advertisement.

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8. Base your answer to the following question on the above picture and the information below.

   A 5.0-kilogram block weighing 49 Newtons sits on a frictionless, horizontal surface. A horizontal force of 20. Newtons toward the right is applied to the block. [Neglect air resistance.]

   Frictionless surface
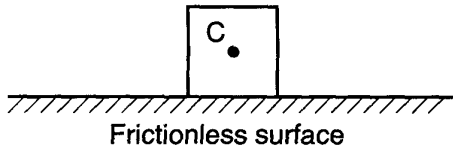
Calculate the magnitude of the acceleration of the block. [Show all calculations, including the equation and substitution with units.]