

Introduction to Momentum

Solve the following problems

1. A 5 kg ball is throw at 20m/s, how much momentum does it have?
2. If a 1200 kg car has a momentum of 36,000 N*s. What is the velocity of the car?
3. A person running at 4m/s has a momentum of 280 N*s, What is the person's mass?
4. Show mathematically why an 80 000 pound (36 000 kg) big rig traveling at 2 miles per hour (0.90 m/s) has the same momentum as a 4 000 pound (1 800 kg) SUV traveling at 40 miles per hour (18 m/s).
5. (Walker, p. 267, #1) What speed must a 0.142 kg baseball have if its momentum is to be equal in magnitude to that of a 1180 kg car mving at 13.4 m/s ?
6. (Walker, p. 267, #2) Find the total momentum of the birdds. Two 4.00 kg ducks heading south at 1.10m/s , and 9.00 kg goose heading north at 1.30 m/s.

Name: _____

Mr. Croom's Physics

Date: _____

Chapter 6: Momentum

BONOUS QUESTION: (Walker, p. 267, #7) Object 1 has a mass m_1 and a velocity $\vec{v}_1 = (2.80 \text{ m/s})\hat{x}$. Object 2 has a mass m_2 and a velocity $\vec{v}_2 = (3.10 \text{ m/s})\hat{y}$. The total momentum of these two objects has a magnitude of $17.6 \text{ kg} \cdot \text{m/s}$ and points in a direction 66.5° above the positive x axis. Find m_1 and m_2 .