

Name \_\_\_\_\_ Period \_\_\_\_\_

### Momentum and Impulse Problems

1. A compact car, mass 725 kg, is moving at 28 m/s.
  - a. Find its momentum. **20300 kg m/s**
  
  
  
  
  
  
  
  
  
  
  - b. What is the velocity of a larger car (mass 2175 kg) when its momentum is the same as the small car in part a. **9.3 m/s**
  
  
  
  
  
  
  
  
  
  
2. A snowmobile has a mass of 250 kg. A constant force of 91.7 N is exerted on it for 60 s.
  - a. What is the change in velocity of the snowmobile? **22 m/s**
  
  
  
  
  
  
  
  
  
  
  - b. What is its change in momentum (its starting velocity is 0)? **5500 kg m/s**
  
  
  
  
  
  
  
  
  
  
3. The brakes exert a 640 N force on a car weighing 15680 N and moving at 20 m/s. The car finally stops.
  - a. What is the cars mass? **1600 kg**
  
  
  
  
  
  
  
  
  
  
  - b. What is its initial momentum (use the mass found in part a)? **32,000 kg m/s**
  
  
  
  
  
  
  
  
  
  
  - c) How long does it take for the car to stop? **50 seconds**

4. A 1 kg rock thrown at 25 m/s has how much momentum? **25 kg m/s**
5. A 1500 kg car has 90000 kg m/s of momentum. What is the car's velocity? **60 m/s**
6. What is the mass of an object traveling 1000 m/s with a momentum of 60000 kg m/s? **60 kg**
7. What is the mass in kg of a 2950 g object? **2.95 kg**
8. Which has more momentum? A 60 kg object traveling at 3 m/s or a 9 kg object traveling at 23 m/s.