

Name: _____ Period: _____

Momentum, Impulse, Collision Problems

1. a. What is the momentum of a 20 kg car rolling at 15 m/s in the negative direction?

b. If the car strikes a tree and stops what is its final momentum?

c. If the car stops in 0.2 seconds calculate the force the tree exerts on the car.

2. A 2 kg blob of clay is moving at 3 m/s and slams into a 4 kg blob of putty at rest.
 - a. Calculate the speed of the two stuck together blobs of putty immediately after colliding.
 - b. Calculate the speed of the two stuck together blobs of putty if the 4 kg blob has an initial velocity of -1.5 m/s.

3. Two bumper cars head towards each other and experience an elastic collision. Car 1 has a mass of 400 kg and Car 2 has a mass of 600 kg. Car 1 has an initial velocity of 4 m/s and Car 2 had an initial velocity of -2 m/s. Car 2 had a final velocity of 2.8 m/s. What is the final velocity of Car 1?