

Name: _____ 2/16/2011 Period: _____

Collision Classwork - Conservation of Momentum

Instructions: Use either the Momentum Conservation chart or equation to solve the following problems:

SHOW ALL WORK FOR CREDIT !!!

1. A 3kg clay ball collides with a stationary 3kg clay ball. The first ball is travelling at 15m/s before the collision. After the collision, they move together.
 - a. Was this an elastic or inelastic collision? In your own words, explain why you believe this.
 - b.
 - c. What is the speed of the joined clay balls after the collision?

2. A 2kg metal ball collides with a stationary 2kg metal ball. The first ball is travelling at 7m/s before the collision. After the collision, the first ball comes to a stop.
 - a. Was this an elastic or inelastic collision? In your own words, explain why you believe this.

 - b. What is the speed of the second ball after the collision?

3. A 3,250kg rocket ship collides with an asteroid with mass 45,475kg and bounces off. Before the collision, the rocket was traveling at 250m/s and the asteroid was traveling at 73m/s. After the collision, the asteroid slowed to 71m/s.
 - a. Was this an elastic or inelastic collision? In your own words, explain why you believe this.
 - b. What was the rocket's velocity after the impact?

4. A 120kg linebacker tackles a 103kg running back in a head on collision. Initially, the linebacker was running at 2m/s and the running back was running at 3.4m/s.
 - a. Was this an elastic or inelastic collision? In your own words, explain why you believe this.
 - b. After the collision, the two players fall together to the ground at what speed?

5. In an explosion, a stationary 46kg object gets blown into two pieces. One piece is 30kg and flies off at 60m/s. The other piece flies away flies off in the opposite direction. How fast does it fly from the point of explosion?