

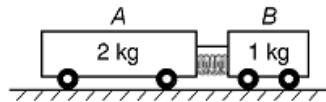
Name _____
Honors Physics
Period _____

Date _____
Momentum WS #5
Mrs. Nadworny

Explosions

Directions: Read online textbook pages 215 - 220. Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

1. A 0.050 kilogram bullet is fired from a 4.0 kilogram rifle that is initially at rest. If the bullet leaves the rifle with momentum having a magnitude of 20. kilogram • meters per second, what will be the magnitude of the momentum of the rifle's recoil?
(A) 0.25 kg•m/s (B) 1600 kg•m/s (C) 80. kg•m/s (D) 20. kg•m/s
2. The diagram below shows a compressed spring between two carts initially at rest on a horizontal frictionless surface. Cart A has a mass of 2 kilograms and cart B has a mass of 1 kilogram. A string holds the carts together.



After the string is cut and the two carts move apart, the magnitude of which quantity is the same for *both* carts?

- (A) inertia (B) momentum (C) kinetic energy (D) velocity
3. A bomb explodes into two pieces that travel in a straight line path away from each other. The mass of the first piece is 3.6 kg and is moving at 53 m/s to the right. The mass of the second piece is 1.8 kg. What is the velocity of the second piece?
 4. A 7.8 kg rifle fires a 4.6×10^{-3} kg bullet at a velocity of 325 m/s north. What is the velocity of the rifle after the bullet is fired?
 5. Miners drill a hole into a large rock in order to blow it apart. A 98.7 kg portion of the rock moves to the left with a speed of 26.1 m/s. What is the velocity of the larger portion of the rock (133 kg) after the bomb explodes?