

NAME:

DATE:

Period:

Momentum and Thermo Exam Review

1. Why is momentum conserved like energy and matter?
2. How is the formula for momentum similar to the formula for kinetic energy?
3. How are the units for momentum similar to the units of energy?
4. A baseball is pitched at 45m/s. It has a momentum of 14.85kgm/s. what is this ball's mass?
5. If that same baseball were pitched at 50m/s, what would its new momentum be?
6. You are driving your brand new Shelby Cobra Mustang down Main St. The curb weight of your car is 19,700N. If you have a momentum of 46,276kgm/s, what is your velocity?
7. A small child is playing with matchbox cars. Car A weighs 0.012kg, Car B has a mass of 0.02kg. While pushing the cars at 1.3m/s, he rams the two together. If this is an elastic collision, and Car B has a final velocity of 1.0m/s, what is Car A's final velocity?
8. Gabby throws a large glob of silly putty at Veronica. The glob has a mass of 0.85kg and a velocity of 3.2m/s. if Veronica is stationary and has a mass of 40kg, what is her final velocity? (what type of collision is this?)

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9. A Howitzer is a 155mm modern military cannon with a mass of 1850kg. They are often mounted on wheels. If the soldiers operating it did not secure the wheels, and the canon fired the 2.9kg round at 708m/s, what would the velocity of the cannon be?

- 10 A 10 kg deer is running with 120 kg·m/s of momentum. What is the deer's velocity?

11. A 750 kg racecar slowed from 32 m/s to 15 m/s, what was its change in momentum?

12. A truck hits a brick wall with a force of 120N. The collision takes 1.3 seconds. What is the impulse of the impact?

13. A force of 500N is applied for .002 seconds to a baseball that weighs .031 kg. What is the change in velocity?

14. What is the change of momentum would a rock have if it impacted the ground for .0274 seconds with a force of 125N?

15. How does this unit apply to keeping an egg whole after falling off a building?