

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Momentum Worksheet

1. Which has a greater momentum: a heavy truck at rest or a moving car? Why?

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2. How can a supertanker have a huge momentum when it moves relatively slowly?

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3. What does it mean to say that momentum (or any quantity) is *conserved*?

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4. When a cannonball is fired, its momentum does change! Is momentum conserved for the cannonball? Why or why not?

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5. When a cannonball is fired, the cannon recoils. Is momentum conserved for the cannon? Why or why not?

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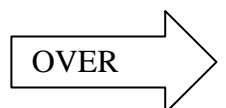
6. When a cannonball is fired, is momentum conserved for the cannon-cannonball system as a whole? (Why is your answer different than in the previous two questions?)

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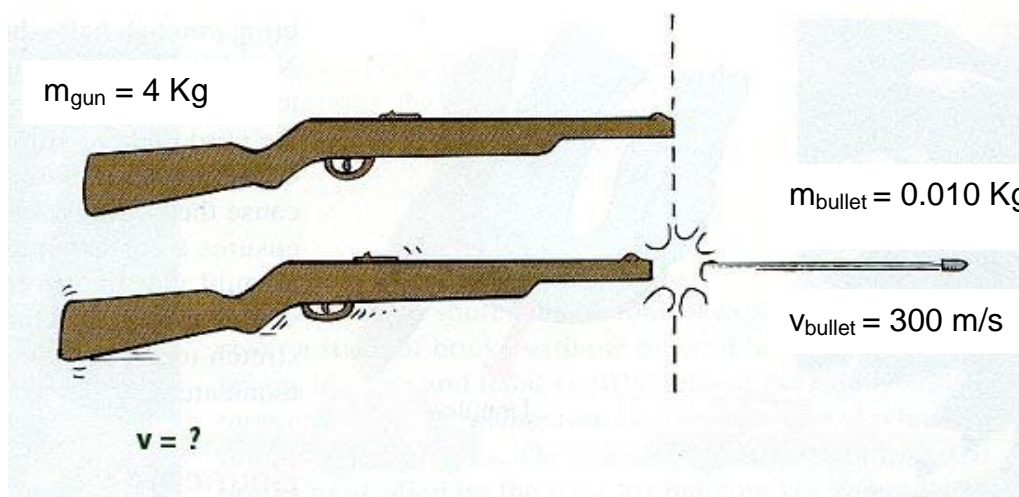
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7. A gun is fired. The mass of the gun is 4 kg. The mass of the bullet is 0.010 kg. The velocity of the bullet after being shot is 300 m/s. Determine the recoil velocity of the gun. SHOW WORK!



ANSWER: \_\_\_\_\_

momentum, mass, velocity

mass<sub>1</sub>, mass<sub>2</sub>, velocity<sub>1</sub>, velocity<sub>2</sub>

8. A 3 kg fish swimming at 1.5 m/s swallows an absent minded .5 kg fish swimming toward it at a velocity that brings both fish to a halt immediately after lunch. What is the velocity of the smaller fish before lunch?

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9. A horse with a mass of 630 kg is traveling at 8 m/s. What is the horse's momentum?

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10. A gun is fired. The mass of the gun is 2.7 kg. The mass of the bullet is 0.011 kg. The velocity of the bullet after being shot is 330 m/s. Determine the recoil velocity of the gun.

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11. A car with a mass of 2500 kg is traveling south at 15 m/s. What is the car's momentum?

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