

**Worksheet: Newton's 2nd and 3rd Laws**

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

1. Explain using Newton's Second Law of Motion, why you can throw a golf ball further than a bowling ball, even though you throw both at the same angle and with the same amount of force.

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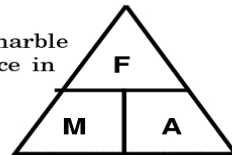
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2. Describe what a force is in physics. \_\_\_\_\_

**For questions 2 and 3 refer to the triangle formula to the right.**

3. A steel marble with a mass of .020 kg is fired at an angle of  $45^\circ$  from the marble launcher. If the acceleration of the marble is  $5.6 \text{ m/s}^2$ , what was the force in Newtons applied to the marble? Include the correct units!



4. What mass will a pumpkin have if a force of 450 Newtons accelerates it to  $110 \text{ m/s}^2$ ? Include the correct units!

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5. **Explain using Newton's Third Law of Motion**, what will happen when a person standing on a skateboard or rollerblades, throws a heavy concrete block as fast as they can to a person standing 10 feet in front of them.

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6. **Explain using Newton's Third Law of Motion**, how starting blocks have helped lower times in sprinting events.

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