



SfS Away from the Classroom!

P03: Collisions (Recommended for Grades 3-5)

Please use the following resource to learn about collisions.

Watch this Video: <https://www.youtube.com/watch?v=51IFubnEAsU>

Answer these questions:

- What happens when a moving bowling ball hits one that is standing still?
- The moving bowling ball has kinetic energy. Where does that energy go?
- What do you think would happen if one bowling ball were more massive than the other?

Activity: Follow these directions to investigate collisions by playing a marble game called Ring Taw.

You will need:

<ul style="list-style-type: none">• One 20-foot-long piece of yarn or string, tied in a loop.	<ul style="list-style-type: none">• One 3-foot-long piece of yarn or string, tied in a loop.	<ul style="list-style-type: none">• A clear area on the floor.• Marbles
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1. Spread the two loops out into circles on the floor, with the small loop in the center of the large one.
2. Each player selects one marble as their shooter marble (remember which one is yours!), and then the rest of the marbles are placed in the small circle.
3. Players take turns trying to knock marbles **out** of the small circle...but their shooter has to stay **in** the large circle! Here's what happens in each turn:
 - a. On the first turn, each player rolls their shooter from anywhere outside the larger circle.
 - b. If they hit a marble out of the small circle -- AND their shooter doesn't leave the larger circle -- they keep the new marble. They go again, rolling their shooter from wherever it stopped.
 - c. Whenever a player doesn't hit a marble out of the small circle -- OR their shooter leaves the larger circle -- their turn is over.
 - d. Once all the marbles are out of the small circle, the player with the most marbles wins.

Make observations & use Claims, Evidence, and Reasoning!

1. **Claim:** Objects can transfer energy to each other during collisions.
 - **Evidence:**
 - **Reasoning:**
2. **Claim:** An object has more kinetic energy if it is moving faster.
 - **Evidence:**
 - **Reasoning:**

