

OH WOW! Moment

Activity by Audra Carlson, Education Manager

Grade Level: K-8<sup>th</sup> grade

## Balloon Rocket Racers

### AT A GLANCE:

Students experiment with Newton's Third Law of Motion while challenging their classmates and using their problem solving skills.

### STUDENTS WILL BE ABLE TO:

Practice the process of scientific inquiry by posing questions and making observations.

### BACKGROUND INFORMATION:

This activity challenges students to think quickly using their knowledge of motion and work as a team.

### PRINCIPLES:

Newton's Third Law states that for every action there is an equal and opposite reaction. This activity encourages students to use Newton's Law to get the best performance from their balloon rockets.

### MATERIALS:

- 20-lb test fishing line, about 10 ft lengths
- Dowel rods , two for each team
- Straws, cut into 4-inch sections
- Assorted sized and shaped balloons
- Two rolls of scotch tape for each team

### PROCEDURE:

1. For each section of fishing line, slide a straw section on and tie a dowel rod to each end. This is your track.
2. Split students up into at least 2 groups of 2 or more. It's just more fun as a relay race.
3. Have each student choose a balloon. This is their rocket.
4. 2 students from each team hold the dowel rods so that the fishing line is stretched between them tightly.
5. The student that is starting the race needs to have the straw section closest to them.
6. Have the first students from each team blow up their balloons and (while pinching them closed) attach them with scotch tape so that the opening of the balloon is facing the opposite direction that they want it to travel. This is a good opportunity to remind them of Newton's Third Law.
7. Countdown and simply let go of the balloon.

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8. Once the balloon rocket reaches the other side, the teammate removes the balloon and replaces it with their own.
9. The first team to launch all their team's rockets wins!

### TRY THIS:

- Have students use stopwatches to measure the amount of time their rocket takes to travel to the other side. Use this info to calculate their rocket's speed.
- Have students use different balloons or make modifications to their balloons. What do you observe?

### INTEGRATE:

- Have students practice their table-making and data-recording skills by having them design tables to keep track of their results in order to compare.
- Have students sketch a labeled diagram of their rocket balloon. Have them label all of the forces that are acting on their rocket balloons.

