

TITLE:

Throwing Frisbee Clockwise and Counterclockwise

GRADE LEVEL:

K-2

SUBJECT AREA:

Mathematics, Grades K-2

FLORIDA SUNSHINE STATE STANDARDS:

MA.B.1.2.1: uses concrete and graphic models to develop procedures for solving problems related to measurement including length, weight, time, temperature, perimeter, area, volume, and angle.

MA.B.1.2.2: solves real-world problems involving length, weight, perimeter, area, capacity, volume, time, temperature, and angles.

MA.B.4.2.2: selects and uses appropriate instruments and technology, including scales, rulers, thermometers, measuring cups, protractors, and gauges, to measure in real-world situations.

DESCRIPTION/ABSTRACT OF LESSON:

Aeronautics applies to other fields of study, not just aircraft. The same science, physics and math principles that govern air vehicle flight also apply to other areas of our lives like sports and sports equipment. The students will pair up into teams of four and stand approximately 20 to 40 feet apart. The four participants on each team will throw the Frisbee in different formations between themselves seeing how the Frisbee will perform.

OBJECTIVES:

The student will demonstrate how a Frisbee flies when thrown through the air.

TEACHER MATERIALS/TECHNOLOGY CONNECTION:

Several Frisbees (different sizes if available)

This is an outdoors activity; reserve time at the outdoor field

STUDENT MATERIALS/TECHNOLOGY CONNECTIONS:

Several Frisbees (different sizes if available)

This is an outdoors activity

DURATION:

60 Minutes

ESSENTIAL QUESTIONS/KEY VOCABULARY:

lift

rounded edges

flight

low pressure region

high pressure region

spinning motion
angular momentum

GROUPING FOR INSTRUCTION:

One to one
Paired
Small group
Whole Group

LESSON LEAD/OPENING:

Title: *Inventor's Workshop: Flight*

Author: Belinda Recio

Number of Pages:

Grade Level: 3–6

Review: This inventor's kit comes with all the materials necessary to construct a diamond kite, snake kite, two types of gliders, and a parachute. *Inventor's Workshop: Flight* is a fully illustrated guide to inventive thinking, problem solving, and flying creations. The kit even comes with information on how you can patent your own flying machine and obtain a legal document that proves it's your invention.

Rating: 🍎 🍎 🍎 🍎

Color Illustrations: No

Color Photos: No

B&W Illustrations: Yes

B&W Photos: No

Publisher: Running Press

ISBN: 0762403462



Read and discuss Inventors Workshop (above)

Have students answer the following questions:

What makes a Frisbee fly? Just like a bird's wing or the wing of an airplane shape plays a large part in influencing the flying ability of the Frisbee. It is light weight, circular, fairly flat, and the edges of the Frisbee are either sloped or rounded. We can see that the rounded edges of the Frisbee looks similar to the front edge of an aircraft wing. We know that the curved upper surface of the wing is what generates lift.

STEPS TO DELIVER LESSON:

1. Discuss with the class the definitions according to the grade level appropriateness. Go into the basic aerodynamic forces that cause a Frisbee when thrown with a spinning motion to "fly" through the air.

2. Take the class outside and divide the group into teams of four students each. Give each team one Frisbee.
3. Have each team throw the Frisbee between them for 10-15 minutes. Have them try different techniques according to their ability levels. Examples would be: low to the ground, tossing it high into the air, spinning clockwise and counterclockwise.
4. Have the students try different size Frisbees in the next 10 minute segment.
5. Stop and discuss on the playing field as a group for a few minutes what they are experiencing as they throw the Frisbee.
6. Continue throwing the Frisbee for 10 more minutes first clockwise then counterclockwise

GUIDED PRACTICE:

Return to the classroom and have another discussion of the aerodynamic forces that are utilized when throwing the Frisbee. Ask the students to enhance their knowledge with the experience that they now have from throwing the Frisbee

INDEPENDENT PRACTICE:

Ask the class to write a paragraph on their experience with the Frisbee throwing.

DIFFERENTIATED INSTRUCTION:

Have students create a competitive game in which they try to out-compete each other in throwing and retrieving the Frisbee. Allow them to use different materials to design their Frisbee and note the results of each design separately.

LESSON CLOSURE:

Explain to students what makes a Frisbee fly? Just like a bird's wing or the wing of an airplane shape plays a large part in influencing the flying ability of the Frisbee. It is light weight, circular, fairly flat, and the edges of the Frisbee are either sloped or rounded. We can see that the rounded edges of the Frisbee looks similar to the front edge of an aircraft wing. We know that the curved upper surface of the wing is what generates lift. Also that all flying things must have something which makes them stable during flight; airplanes and birds have tails, rockets have fins. For a Frisbee it is the spinning motion generated from the Frisbee throw which stabilizes the Frisbee as it flies.

ASSESSMENT:

Have students communicate what they have learned by answering the following questions:

How the Frisbee does use aerodynamic forces to fly through the air?

Can you state some of the reasons of how the Frisbee uses aerodynamic forces to fly through the air?

List other reasons why the Frisbee uses aerodynamic forces to fly through the air.