

# Arctic Migration

Duck... Duck... Goose! Explore Arctic Geese migration as you design a far-flying goose glider.

## TEKS:

SCI 1.8 D: The student is expected to demonstrate that air is all around us and observe that wind is moving air.

SCI 3.6 C: The student is expected to observe forces such as magnetism and gravity acting on objects.

SCI 4.6 D: The student is expected to design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.

SCI 5.6 D: The student is expected to design a simple experimental investigation that tests the effects of force on an object.

## Materials:

- Black paper
- Glue
- 2 Googly Eyes
- 3 x 5 notecard
- Pencil
- Scissors
- Straw
- Tape

## How To:

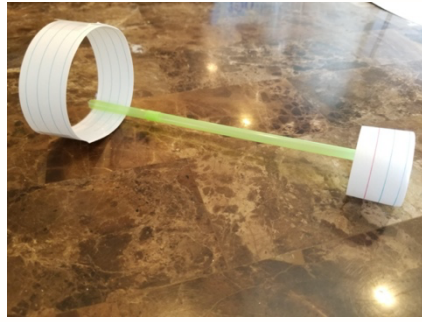
*Part 1: Create a hoop glider*

1. Cut the notecard into three separate pieces measuring 1 x 5 inches each.
2. Tape two of your pieces together end-to-end into a large hoop, making sure to overlap the papers as you tape them.
3. Use the last strip to create a smaller hoop, also overlapping the ends of the strip when you tape them together.
4. Tape the large hoop to one end of the straw and the small hoop to the other end. You want the straw to lie at the bottom and inside of both hoops.

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*Part Two: Turn your hoop glider into an Arctic Goose!*

1. Glue the googly eyes to the top of the smaller hoop.
2. Cut out a small black triangle for the beak of your goose and tape it to the smaller hoop.
3. Trace three of your fingers twice onto the black paper. Cut these out and tape them to the middle of the straw in between the hoops as they will become the wings of your goose.
4. Now it's ready to test! Hold your goose glider in the center by the straw, with the hoops on top. Throw your goose glider at a slight upward angle and see how far it goes!

### **STEM Explanation:**

Twice a year Arctic geese travel around 2,500 miles! Arctic geese leave central Canada in autumn to head to their wintering grounds in the Gulf of Mexico. Arctic geese leave the Gulf of Mexico to head back to Canada in the late spring. The Arctic geese typically migrate in flocks of 100 to 1,000 geese. One of the important stopovers on the Central Flyway migration route is Squaw Creek National Park in Missouri. The entire journey would take these arctic geese about 70 hours if they didn't stop going from Canada to Mexico. While these geese are flying, they have been clocked out about 40 – 50 mph around 3,000 feet above the ground!

Arctic birds have developed many adaptations that help them migrate these long distances. When creating or modifying your design, consider different wing shapes for your arctic geese. Do you think shorter wings or longer wings help with aerodynamics? What about wider or skinnier wings? Arctic migration birds often have very large wing spans, and many have wide feathers that help them glide further like the circles on your glider!

### **Career:**

*Aeronautical engineers* create machines such as airplanes. They design, develop, and test aircraft and supervise the manufacture of these products.

### **Resources:**

<https://sciencebob.com/the-incredible-hoop-glider/>

<http://www.dailymail.co.uk/sciencetech/article-1213918/Snow-geese-stopover-wildlife-refuge-en-route-wintering-grounds.html>

<http://www.birdnature.com/flyways.html>

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