

Science @Home

LIFE ON ICE



Ready to brave the cold? Bundle up and spend a week with activities designed to engage ages 4-8.

Explore the ice, snow, and remarkably resilient life that survives our planet's frigid Arctic and Antarctic habitats. Divided into 4+ days of activities, your petite polar adventurers will enjoy a wintry mix of hands-on experiments, crafts, and guided videos.

(Please note: While Science @ Home activities are designed for kids, some little ones might need adult help with reading instructions and preparing crafts).

Day 1: It's Cold Outside: Ice & Snow *60-90 minutes*

- » My First Winter Puppet Show (video)
- » Make a snowflake (craft)
- » Fishing for Ice (experiment)
- » Ice Cores: Nature's Time Capsule (activity)

Day 2: Life on the Tundra

45-60 minutes

- » Clothespin Caribou (craft) (en español)
- » Sponge Paint Polar Bears (craft)
- » Tundra Life coloring page (coloring)
(en español)

Day 3: Animals of the Arctic Ocean

45-60 minutes

- » Narwhal Hat (craft)
- » Create a Clay Walrus (craft)
- » Specimen Investigation: Tusks (video)

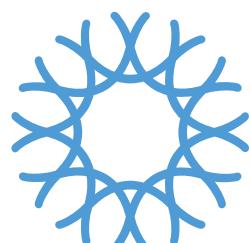
Day 4: Birds of the Antarctic

45-60 minutes

- » Birds of the Antarctic (coloring)
- » Penguin Origami (craft) (en español)
- » Snowy Owl Mask (craft)

Kid & Caregiver Extension Activities

- » Sugar on Snow (activity)
- » Penguin Wave (video)
- » Why do we have seasons? (video)





Make a Snowflake

Snowflakes are crystals of pure ice. They can grow into trillions of possible formations, but almost all have six sides. Snowflakes form six-sided shapes thanks to the attraction between water molecules. When water freezes, the molecules spread out and arrange into the best fit—a hexagon shape. Make your very own six-sided snowflake to hang in a window!

Materials

Scissors

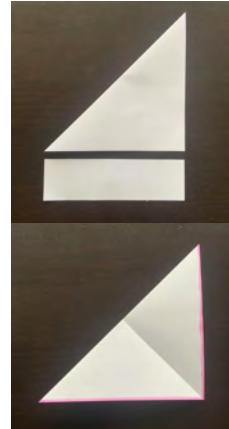
1 piece of printer paper

Directions

Follow along with the pictures to fold and cut your own six-sided snowflake!

In the example, the cut edges of the paper are colored pink.

1. **Cut** your paper into a square.



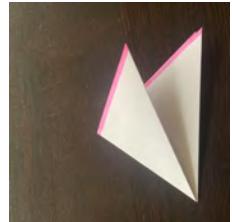
2. **Fold** the square in half diagonally.



3. **Fold** the triangle in half.



4. **Fold** over one third of the triangle .



5. **Fold** over another third of the triangle. Your paper should look almost like an ice cream cone.



6. **Cut** the top edge off at an angle. Keep the bottom piece.



7. **Cut** small triangles or other shapes out of the edges of this new triangle.



8. Make sure to leave some space between the triangles as you cut.



9. **Unfold** the middle piece to reveal a six-sided snowflake!

10. **Repeat** this process as many times as you'd like to create a blizzard of snowflakes to display in a window!

Snowflake photo by [Zdeněk Macháček](#) on [Unsplash](#)



Fishing for Ice

Have you ever seen people put salt on the road when it snows? Adding salt to ice lowers the freezing point of water from 32° Fahrenheit (0° Celsius) to as low as 0° Fahrenheit (-17.7° Celsius), making the snow turn to water if its temperature is above the new freezing point. The more salt you add, the lower the freezing point will be, which is why places with a lot of snow use a lot of salt to clear the roads quickly. In this experiment, you will make use of this scientific mechanism to fish for ice with just some string and salt.

Materials

| | |
|-------------------------|---------------------|
| ½ teaspoon of salt | Small bowl of water |
| 2 Ice cubes | String or yarn |
| 1 Spoon | Scissors |
| 2 Empty plates or bowls | |

Directions

1. **Place** one ice cube in each empty plate or bowl.
2. **Cut** the yarn or string into 2 pieces, about 6 inches long, and dip them in the bowl of water.
3. **Lay** one wet string across the top of each ice cube.

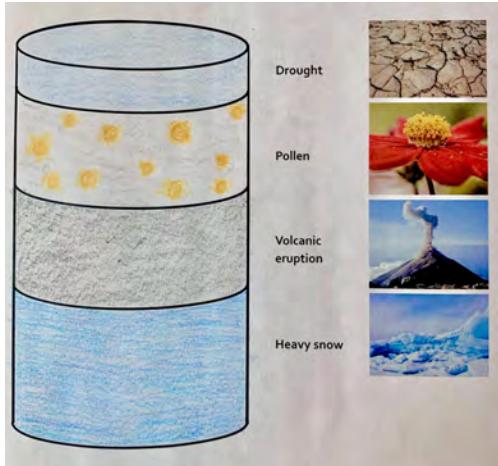


CALIFORNIA
ACADEMY OF
SCIENCES

4. **Sprinkle** $\frac{1}{8}$ tsp of salt on top of ONE of the ice cubes and the string.
5. **Wait** for two minutes.
6. **Lift** the string of the *unsalted* ice slowly and gently. What happens?
7. **Lift** the string of the *salted* ice slowly and gently. What happens?
(The ice cube should lift up with the string.)
8. **Repeat** the experiment to see if you get the same results.
9. **Clean** up by dumping the ice and melted water into a sink.
10. *Challenge:* **Repeat** the experiment, but leave the string dry. Does anything change?

What is going on?

Why does adding salt make the ice cube stick to the string? Think about what happens if you hold an ice cube in your hand. Does your hand get warmer or colder? Similarly, would the wet string laying on an ice cube get warmer or colder? Remember that salt lowers the freezing point of water, making ice melt. So as the ice melts from the salt, the ice takes heat away from its surroundings, whether that is the air, your hand, or the wet string (which is why your hand feels cold after holding ice). As the string loses heat, the unsalty water in the string freezes, causing it to attach to the ice cube.



Ice Cores: Nature's Time Capsule!

Ever heard of an ice core? Scientists go to the coldest parts of the world, such as Greenland, Antarctica, and even high mountains like the Hymalyas to drill long cylinders of ice out of glaciers. They then study the different layers within these ice samples to learn more about past climates.

Materials

Crayons, colored pencils, or markers
Printed ice core templates (pages 4-5)

What is an ice core?

How do you think we can learn about what Earth was like in the past? To learn about what kinds of plants and animals lived before us, scientists like paleontologists dig into the ground, looking at layers of dirt and rock. The bottom layers are the oldest and the top layers are the newest.

Can we also learn about past climates (patterns of weather) by looking at layers? Yes! Using special drills, scientists drill long cylinders of ice or "ice cores" from the coldest places on Earth, like Greenland and Antarctica, to see how climate has changed over time. How much snow fell each year? Did a volcano erupt? In some places, the deepest layers can be 800,000 years old!

Studying these layers of ice and dust can help us understand past climates and make predictions about the climate today and in the future.



The dark band in this ice core from West Antarctica is a layer of volcanic ash that settled on the ice sheet approximately 21,000 years ago. Credit: Heidi Roop, National Science Foundation (NSF).

Part 1: Color your own ice core

1. Print the ice core template on page 4.
2. Look at the pictures next to the layer to learn what was happening in a past climate.
Which ice layer is thicker: the year there was lots of snow, or the year there was a drought? What would it look like if a volcano erupted, spewing ash into the air? Or if strong winds blew around pollen from plants? How might different events change the look of an ice core layer—for example, pure white for lots of snow, dark thin line for ash from a volcanic eruption, etc.?
3. Draw and color the layers of the ice core template to look like these changes in climate.



4. **Think** about these questions:

- a. How do you think climate affects living things like plants and animals?
- b. Why could it be important to learn about how our planet has changed over time?

Part 2: Your own weather “ice core”

1. **Print** the template on page 5.

2. **Look** out a window or go outside with an adult, and observe the weather. Weather is what happens every day, like a cold, cloudy day in the winter or a warm, clear day in the summer. Climate is a pattern of weather happening over a long period of time, like winters getting warmer year after year.

- a. Is the sky sunny or cloudy?
- b. Is there wind or rain?
- c. Is it warm or cold?
- d. Is the sky clear or hazy/smoky?

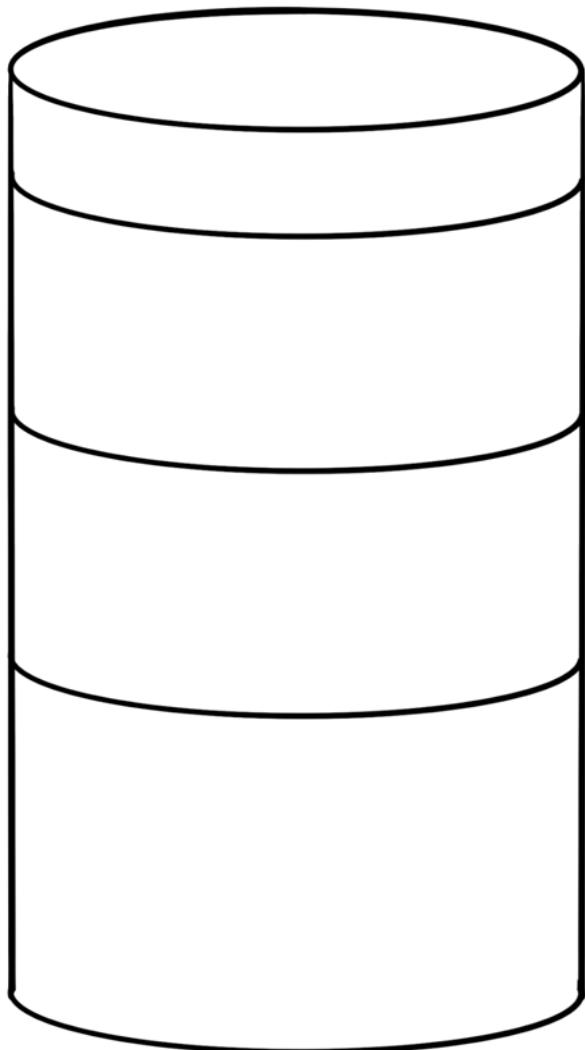
3. **Color** the layer labeled “Day 1” to show what today’s weather looks like. An adult may help you write the temperature and/or the Air Quality Index (“AQI”, how smoky, hazy, or clear the air is).

4. **Repeat steps 1-3** for 3 days out of a week, filling each layer of your weather core.

5. **Think** about these questions:

- a. Do you notice a pattern?
- b. What would you expect to see if you observed for a longer period of time?
- c. What would you expect to see if you observed a different season?

Ice Core Template



Drought



Pollen



Volcanic
eruption



Heavy snow

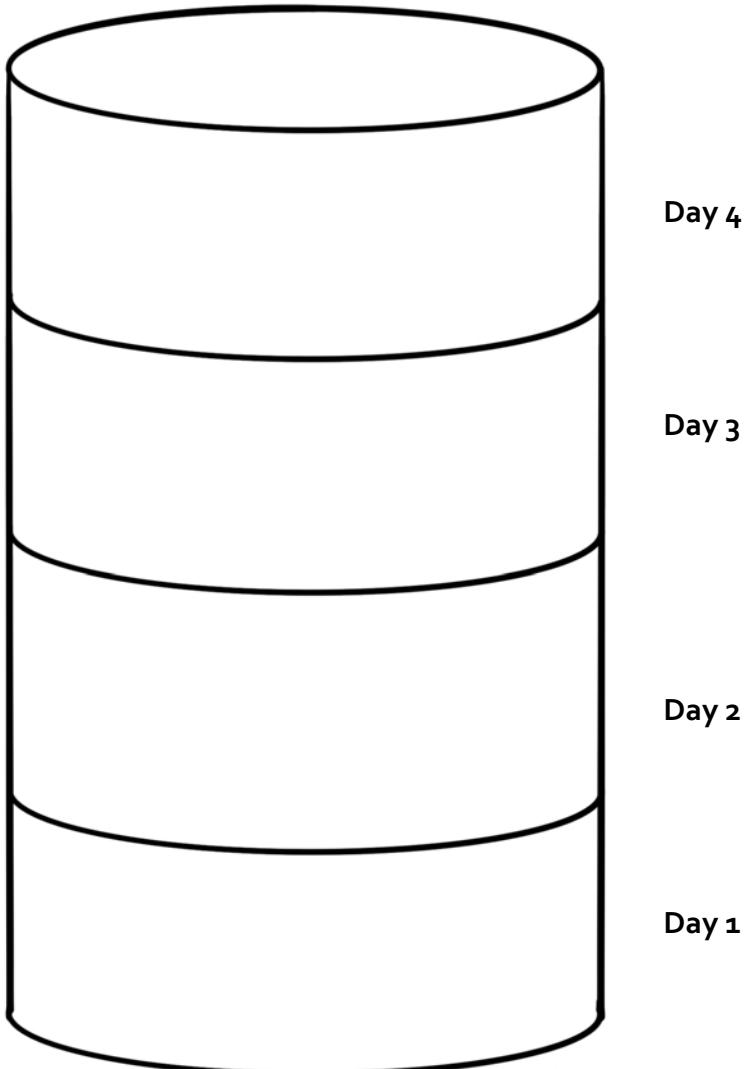


Photos from Unsplash: "Drought" by Maciek Wróblewski, "Pollen" by Magda Pawluczuk, "Volcanic eruption" by Gary Saldana, "Heavy snow" by Sophia Simoes



CALIFORNIA
ACADEMY OF
SCIENCES

My Weather "Ice Core" Template





Clothespin Caribou

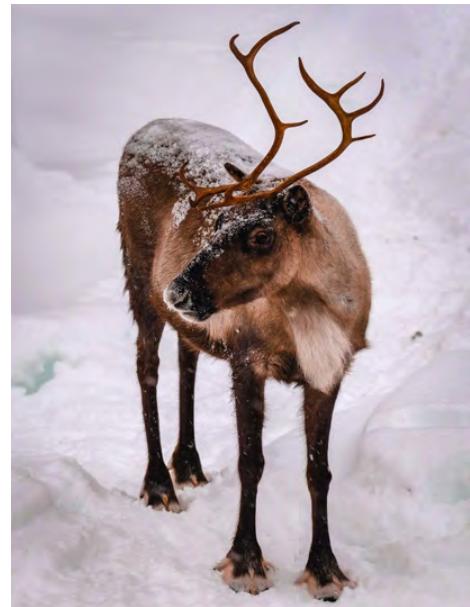
Caribou spend a lot of time on their hooves. They migrate, or travel long distances, to find food, water, shelter, and space to raise their calves. Some herds migrate 3,000 miles every year—that would be like walking from California to New York! Caribou's large, wide hooves help them paddle across rivers, and walk on top of snow. Their hooves also have sharp edges for digging down through snow to find lichen, one of their most important foods. Craft your own caribou with its special hooves and imagine where yours might migrate.

Materials

Caribou body template (page 3)
Colored pencils, crayons, or markers
Black marker
2 clothespins
Scissors

Directions

1. **Print** the caribou body template on page 3.
2. **Color** the caribou body using colored pencils, crayons, or markers. Caribou are usually brown, tan, and gray, but you can make yours any color you like!
3. **Cut** the caribou out, and set aside.

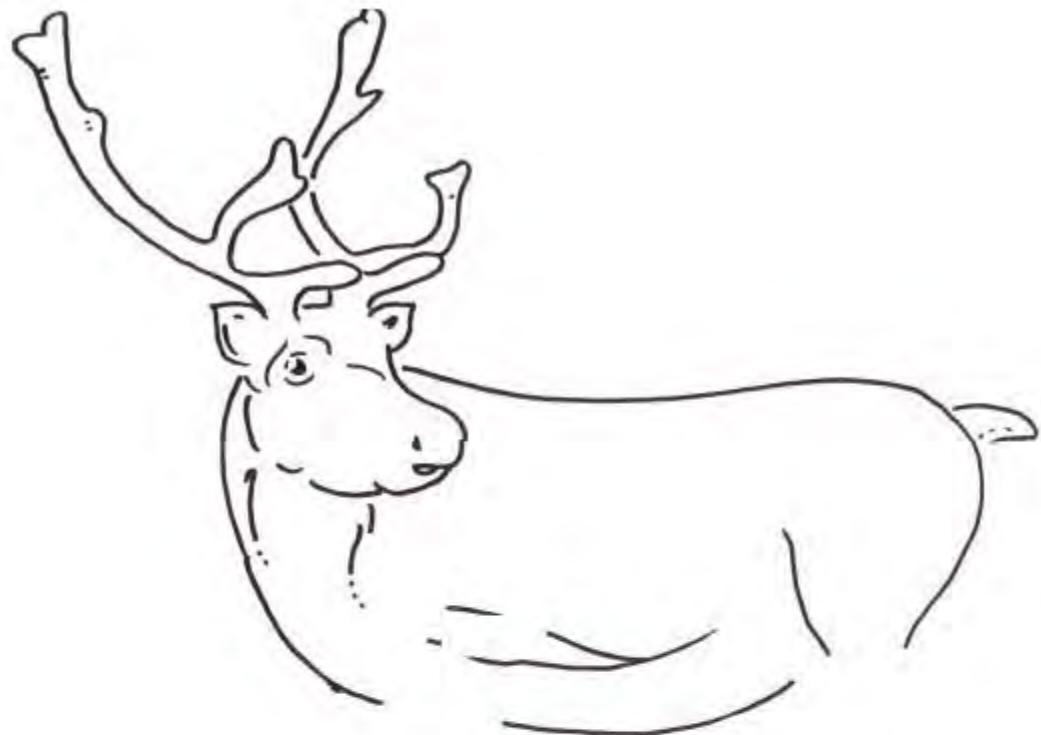




CALIFORNIA
ACADEMY OF
SCIENCES

4. **Examine** your clothespins. One side is the clip that will hold onto the paper caribou body and become the top of the caribou's leg. The other end of the clothespin is the part you squeeze to open the clip—this will be your caribou's hoof.
5. Caribou have cloven hooves. That means their hooves are split into two toes, like a goat! With the black marker, **draw** two small triangles on the squeezing side of each clothespin.
6. **Draw** fur on the rest of your clothespin using markers, crayons, or colored pencils. This will complete the caribou's legs.
7. **Squeeze** the hoof end of your clothespin to open up the clip side, and clamp it onto your caribou body.
8. **Have fun** with your new caribou! **Migrate** your caribou to new places around your home. Where could it find food, water, or shelter?





Pinza de Caribú



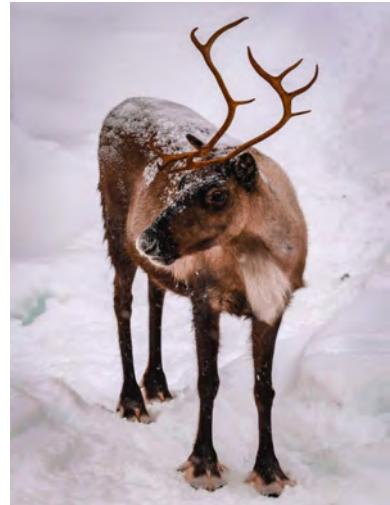
Caribú pasan mucho tiempo a pie. Ellos migran, o viajan largas distancias, para encontrar comida, agua, refugio y espacio para criar sus terneros. Algunos rebaños migran 3.000 millas cada año, ¡eso sería como caminar de California a Nueva York! Las pezuñas grandes y anchas de caribú ayudan a remar a través de ríos y caminar sobre la nieve. Sus pezuñas también tienen bordes afilados para excavar abajo a través de la nieve para encontrar el liquen, uno de sus alimentos más importantes. Crea tu propio caribú con sus pezuñas especiales e imaginé dónde el tuyo podría migrar.

Materiales

Plantilla de cuerpo de caribú (página 3)
Lápices de colores, crayones o marcadores.
Marcador negro
2 ganchos de ropa
Tijeras

Instrucciones

1. **Imprime** la plantilla del cuerpo de caribú en la página 3.
2. **Colorea** el cuerpo del caribú con lápices de colores, crayones o marcadores. Los caribúes generalmente son marrón, marrón claro, y grises, pero puedes hacer el tuyo cualquier color que quieras.
3. **Corta** el caribú y déjalo a un lado.
4. **Examina** las pinzas de la ropa. Un lado es el clip que se sujetará al cuerpo del caribú de papel y se convertirá en la parte superior de la pierna del caribú. El otro extremo de la pinza es la parte que aprietas para abrir la pinza, esta será el pezuña de tu caribú.

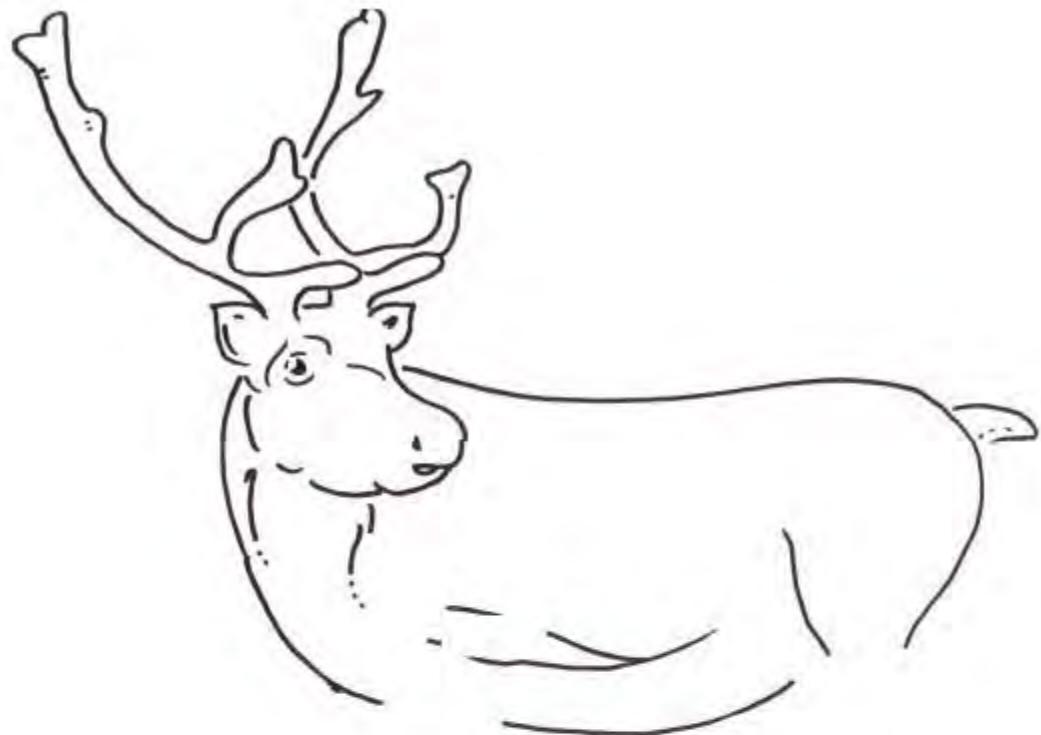


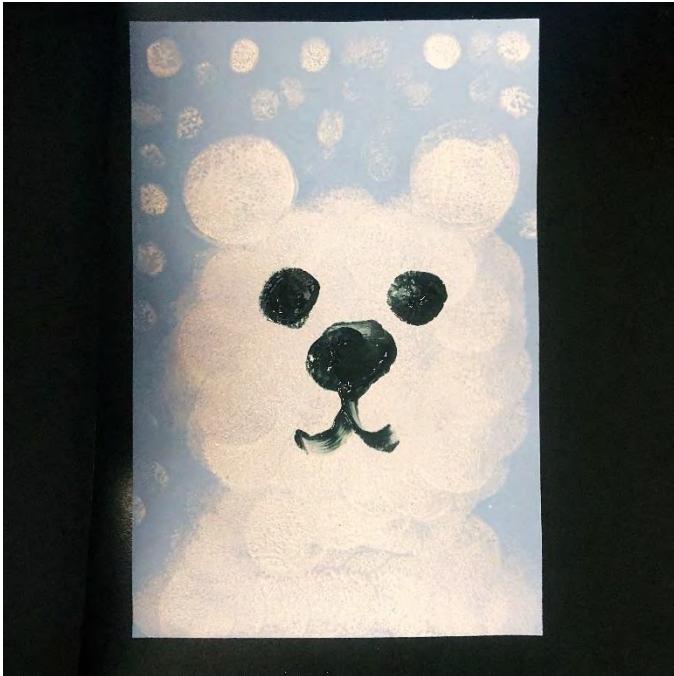


CALIFORNIA
ACADEMY OF
SCIENCES

5. Los caribú tienen pezuñas clavadas. Eso significa que sus pezuñas están divididas en dos dedos, ¡como un chivo! Con un marcador negro, **dibuja** dos pequeños triángulos en el lado apretando de cada pinza de ropa.
6. **Dibuja** pelaje en el resto de tu pinza de ropa usando marcadores, crayones o lápices de colores. Esto completará las patas del caribú.
7. **Aprieta** el extremo de la pezuña de tu pinza de ropa para abrir el lado del clip y sujeta el cuerpo de tu caribú.
8. ¡Diviértete con tu nuevo caribú! **Migra** tu caribú a nuevos lugares alrededor de tu casa. ¿Dónde podría encontrar comida, agua o refugio?







Sponge Paint Polar Bears

Even though polar bears are usually born on land, they spend most of their lives out on sea ice. They use sea ice to travel, hunt, and mate, and may even build their maternity dens on sea ice, too. To stay warm in these icy conditions, polar bears rely on fat reserves. Their amazing sense of smell helps them sniff out prey, like seals, up to one kilometer (0.6 miles) away! Make your own super-sniffing polar bear using sponge brushes and paint.

Materials

Blue paper
White and black paint
Sponge brushes

Directions

1. **Dip** your sponge brush in the white paint. **Paint** a polar bear's head and face by pressing the sponge on the paper to make one large dot at a time.
 - a. **Make** a large circle for the face, and two small ones on top of the head for ears.
 - b. **Fill in** the face and neck with many small white dots.
 - c. *Optional:* **Add** snowflakes in the background.
2. **Paint** on eyes, a nose, and a mouth for your polar bear with black paint.
3. Ta-da! Your polar bear is complete and ready for winter!





Tundra Life

Life on the tundra is tough. Despite its icy ground, tundra is actually a dry desert, with frozen soil called permafrost and a complete lack of trees. Animals must be adapted to handle the dark winters and buggy summers.

Caribou: Also known as reindeer when they're in human care, caribou are unique in the deer family because both males and females grow antlers. Every year, these bony antlers fall off, then grow again. How do you think caribou use their antlers?

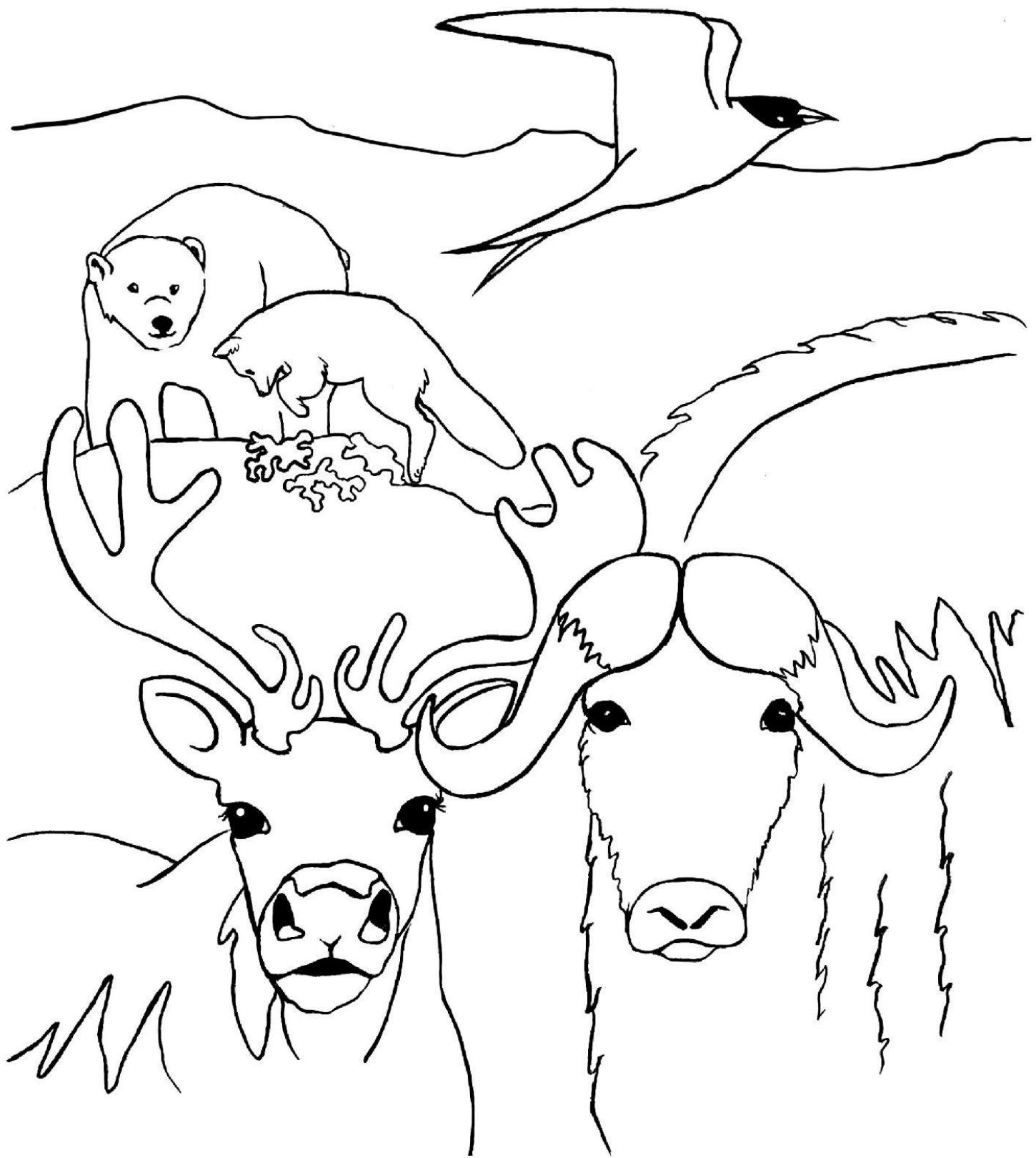
Arctic Tern: With their long wings and v-shaped tail, terns are great at flying and diving through the air. Their feathers are mostly white, with a black patch on their head, and red-orange beak and feet.

Arctic Fox: How can an Arctic fox catch a lemming hiding under the snow? By pouncing and diving head first into the snowdrift! These foxes also scavenge for leftovers of bigger predators, and even eat bird eggs and berries. Their coats are white in the winter and brown in the summer.

Musk Ox: What long hair you have! Musk oxen have helmet-like horns to protect themselves from predators like Arctic wolves. Their long, woolly coats keep them warm when the temperature drops in the winter.

Polar Bear: They may be bears, but these Arctic icons are also considered marine mammals! Their long, narrow head and neck and webbed feet make them great swimmers, but when there is less sea ice in the summers, they look for prey on the tundra.

Lichen: A favorite food of caribou, lichen is made of a fungus (like a mushroom) and an algae (similar to a plant) working together. The fungus shares nutrients and water, and the algae shares energy it gets from the sun like a plant.





Vida tundra

La vida en la tundra es dura. A pesar de su tierra helada, la tundra es en realidad un desierto seco, con suelo congelado llamado permafrost y una completa falta de árboles. Los animales deben adaptarse para soportar los inviernos oscuros y los veranos llenos de insectos.

Caribú: También conocido como renos cuando están en el cuidado humano, caribú son los únicos en la familia de los ciervos que tanto los varones como las hembras crecen astas. Cada año, botan estas astas, y luego crecen de nuevo. ¿Cómo crees que caribú utiliza sus astas?

Zorro ártico: ¿Cómo puede un zorro ártico agarrar un lemino escondido bajo la nieve? ¡Deslizando y buceando, cabeza primero a la deriva de nieve! Estos zorros también buscan los restos de depredadores más grandes, e incluso comen huevos de aves y bayas. Sus abrigos son blancos durante invierno y marrón durante el verano.

Oso polar: Pueden ser osos, pero estos iconos árticos también son considerados mamíferos marinos! Su cabeza y cuello son largos y estirados y sus pies palmeados los hacen estupendos nadadores, pero cuando hay menos hielo marino durante los veranos, buscan sus presas en la tundra.

Liquen: Un alimento favorito de caribú, el liquen está hecho de un hongo (como un hongo) y de una alga (similar a una planta) trabajando juntos. El hongo comparte nutrientes y agua, y las algas comparten la energía que obtiene del sol como una planta.

Charrán ártico: Con sus largas alas y su cola en forma de V son geniales para volar y bucear a través del aire. Sus plumas son en su mayoría blancas, con un parche negro en la cabeza, y el pico y los pies son rojo-anaranjado.

Buey almizclero: ¡Qué pelo largo tienes! Los bueyes almizcleros tienen cuernos en forma de casco para protegerse de depredadores como los lobos del Ártico. Sus largos abrigos de lana los mantienen calientes cuando la temperatura baja durante el invierno.



CALIFORNIA
ACADEMY OF
SCIENCES





Narwhal Hat

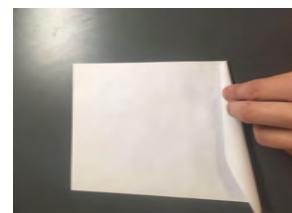
Narwhals, sometimes called the “unicorns of the sea,” are adapted to live in the cold waters of the Arctic Ocean, thanks to their thick layer of fat called blubber. Most male narwhals and some females have a spiral tusk, which is an elongated canine tooth 4-10 feet long, emerging from the front of their face! How do you think narwhals use their tusks? They’ve been observed “tusking,” or crossing their tusks with one another, and even using their tusks to tap and stun their prey!

Materials

Scissors
Tape or glue
Print-out templates (page 3)
Blue construction paper (or white paper, colored blue)
Colored pencils, crayons, or markers
Googly eyes (optional)

Directions

1. **Print** the templates on page 3 (thick paper is preferable).
2. **Cut** out the templates.
 - a. *Optional:* If you are printing on printer paper, **trace** the templates onto thicker paper, and **cut** out.
3. **Make** the narwhal’s tusk.
 - a. **Cut** a white piece of paper in half “hamburger style” or “portrait.”
 - b. Starting from one corner, **roll** one half into a cone shape (*see photos*).

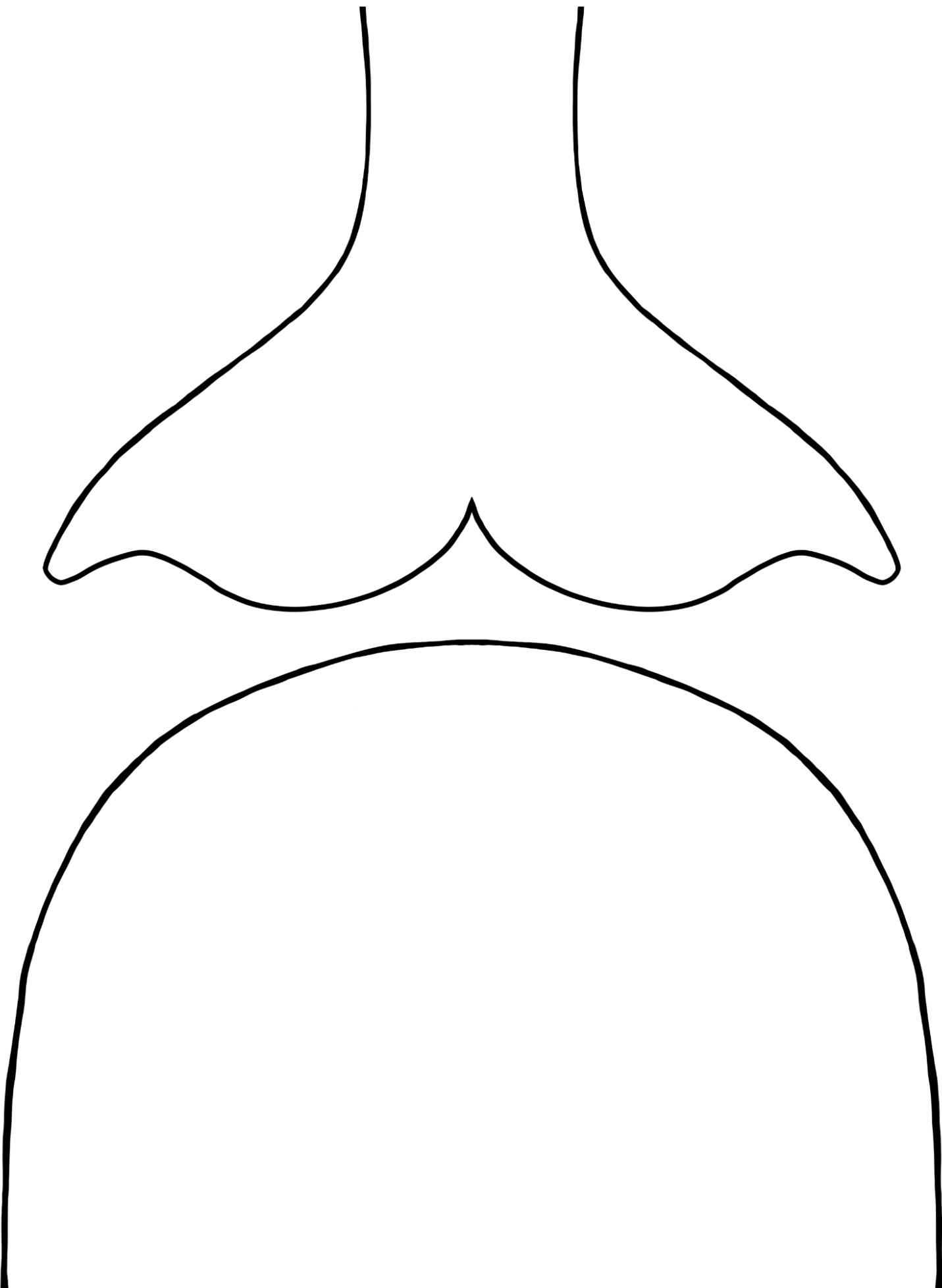




CALIFORNIA
ACADEMY OF
SCIENCES

- c. **Tape or glue** the cone so it doesn't unravel.
 - d. **Cut** the bottom of the cone so it is flat.
 - e. **Draw** a spiral around the cone with a gray or black pencil, crayon, or marker.
 - f. **Tape** the tusk to the semicircle narwhal head.
4. **Decorate** your narwhal using colored pencils, crayons, markers, and googly eyes (optional). Narwhal skin is usually mottled gray, black, and white.
5. **Cut** one or two strips of blue paper and **tape** into a head band that fits around your head.
 6. **Glue or tape** the narwhal head and tail to the head band on opposite sides.
 7. **Wear** your hat! Imagine what it would be like to swim through the cold Arctic Ocean.







Create a Clay Walrus

My, what big tusks you have! Walruses live throughout the Arctic Circle and are related to seals and sea lions. To stay warm in the chilly Arctic waters, walruses have thick layers of blubber (fat) and use their vibrissae (whiskers) to find food. Their long tusks help them haul out onto ice floes and defend themselves. Use a toothpick and some clay to create your own clay walrus.

Materials

Photo of a walrus (page 2)
Ice block template (page 3)
1 ball of craft putty, sculpting clay, or play dough (recipe on page 4)
1 toothpick
2 whole peppercorns or black beads
Scissors
Natural bristles, twine, or hemp string

Directions

1. **Divide** the clay into two pieces. **Roll** one piece into a short log and the other into a ball. **Pinch off** two small pieces from the log and set aside—these will be the front flippers.
2. **Make the body** by pressing the log onto the ball and smoothing the seam. The log portion will be the back of the body and the ball portion will be the front of the body.



Note: If you are using homemade play dough, you may need to add water when smoothing the seams.

3. **Look** carefully at the walrus photo to sculpt the body. Some things to notice:

- a. The chest area is very large.
- b. The body gets thinner toward the hind flippers.
- c. The neck is not visible.
- d. The front flippers point to the back of the body.
- e. The muzzle has two tusks and a lot of whiskers.

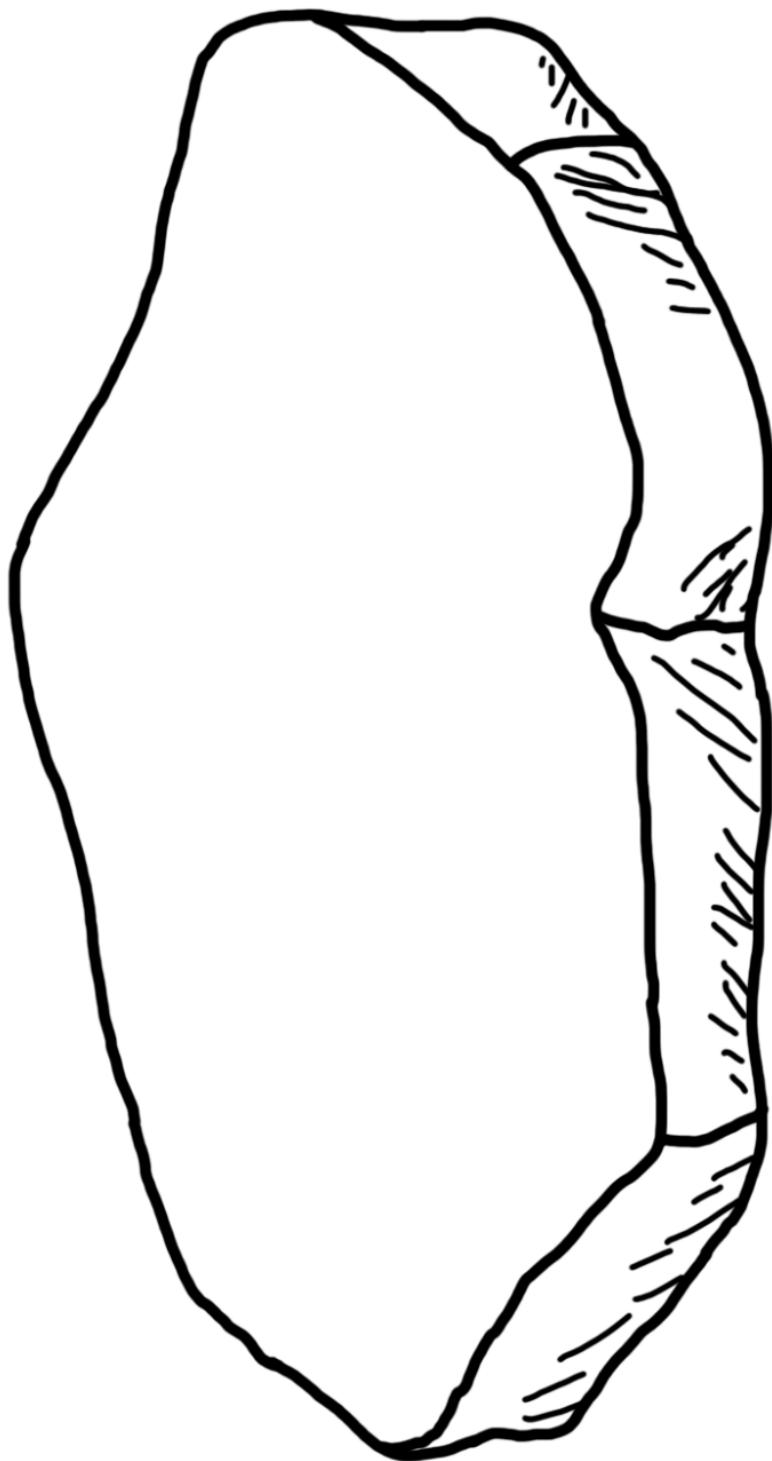


4. **Form** the front flippers from the two small pieces of clay you set aside earlier and attach them to the body.
5. **Make** two eye holes and two nostrils using the end of the toothpick. **Press** one bead or peppercorn in each eye hole. *Optional:* You can also trace some wrinkle lines on the body.
6. **Snap** the toothpick in half and **insert** one under each side of the muzzle.
7. **Cut** the natural bristles, twine, or hemp string into short pieces and insert them in the muzzle to make the whiskers. Walrus whiskers are extremely sensitive! They help the walrus find prey like clams along the murky sea bottom.
8. *Optional:* **Print and cut out** the ice block template. **Place** the clay walrus on top of it so they can take a rest.





CALIFORNIA
ACADEMY OF
SCIENCES





Play dough recipe

Adult supervision and assistance required.

Materials

1 cup flour
1/3 cup salt
Mixing bowl
1/3 cup of warm water
2 tsp vegetable oil
2-3 drops of food coloring (your choice, optional)

Directions

1. **Combine** 1 cup flour and 1/3 cup salt in a large mixing bowl.
2. In a separate container, **mix together** 1/3 cup of warm water, 2 tsp vegetable oil, and 2-3 drops of food coloring.
3. **Combine** the dry ingredients with the wet and form a dough. **Knead** and add flour or water as needed until you have a play dough consistency.
4. Store in an airtight container in the refrigerator for up to 2 months.

Birds of the Antarctic

Many species of birds live in the Antarctic, making the black-and-white landscape come alive with specks of color. What color will your birds be?

Wandering Albatross:

The wandering albatross lives up to its name: These seabirds are able to circumnavigate the Southern Ocean multiple times in a single year! It also has the largest wingspan of any bird, measuring up to 11.5 ft (3.5m) in length from wingtip to wingtip. With such huge wings, these birds can stay airborne for an extended period of time without flapping their wings, gliding through the air like a plane.

Antarctic Tern:

This small bird can be found in large flocks of up to 100 birds that settle on the islands and shores of Antarctica. They nest on rocky beaches to lay their eggs and make periodic trips to the ocean to find food. The terns dive down into the sea to find small fish and crustaceans like Antarctic krill.

Brown Skua:

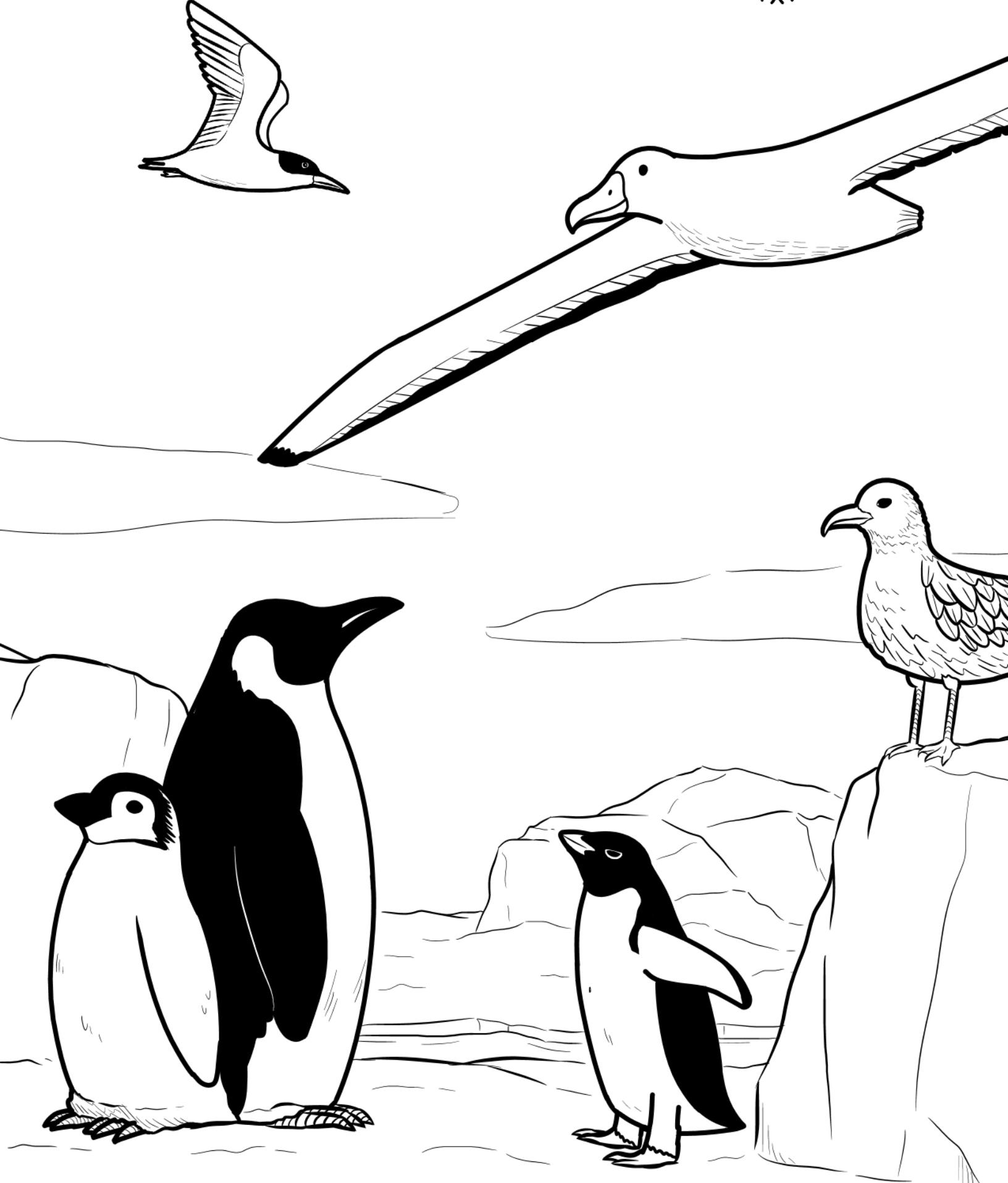
Skuas are medium-sized predatory seabirds that live on the shores of the Southern Ocean and Antarctic regions. Brown skuas will steal food from penguins and other seabirds by harassing them until they vomit the food out.

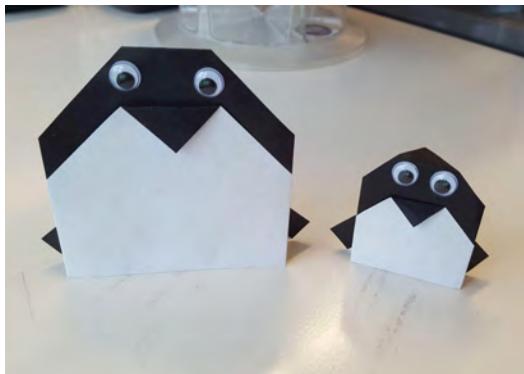
Emperor Penguin:

The largest—and arguably the most famous—penguin in the world, the emperor penguin lives its entire life in Antarctica and is the only penguin that breeds during the harsh Antarctic winter. To avoid predators, the penguins move over 31 miles (50 km) inland to breed, lay eggs, and care for their chicks. In order to feed the chick and themselves, the parents make monthly trips back to the ocean to stock up on fish, squid, and krill.

Adélie Penguin:

Adélie penguins can be found along the entire coast of Antarctica, making them the only other penguin besides the emperor penguin that lives exclusively in Antarctica. These penguins typically live on sea ice in the Southern Ocean where they can rest between feeding. The only time Adélie penguins return to the shores of the Antarctic continent is to breed and care for their young.





Penguin Origami

Not all penguins live in the snow!

Only two species, the emperor penguin and Adélie penguin, live their entire lives on the Antarctic continent. But no matter where they live, all penguins swim to catch their prey (including fish, squid, or crustaceans) and have their signature black and white coloration. This is a helpful adaptation called countershading, which is a form of camouflage that helps them blend into the open ocean. Celebrate these flightless birds by making your very own black and white origami penguin.

Materials

Googly eyes

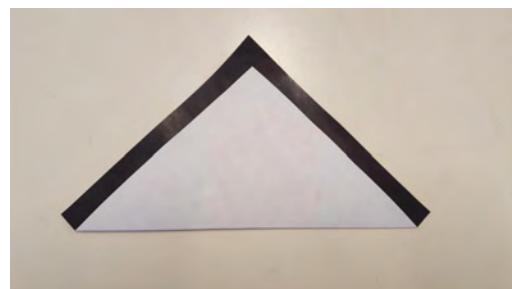
Glue

Ruler

Black squares (page 3)

Directions

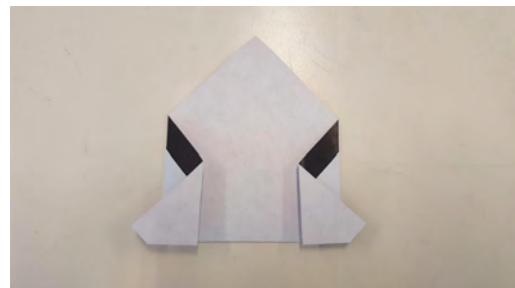
1. **Cut** out both black squares on the last page. One will be an adult penguin and the other a penguin chick. Follow the same instructions for both.
2. **Place** the large black square diagonally in front of you and **fold** the bottom corner up. There should be a noticeable space between the two black and white folds, as demonstrated in the photo. Remember to crease well.
3. **Fold** a small section of the white corner down to make the penguin's beak.

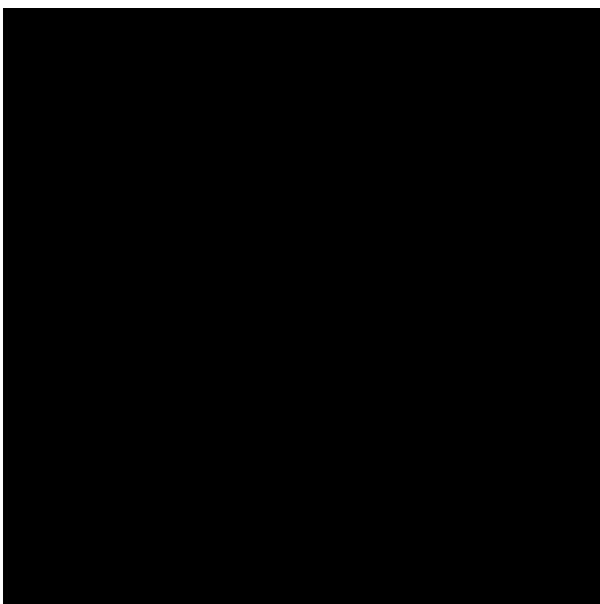
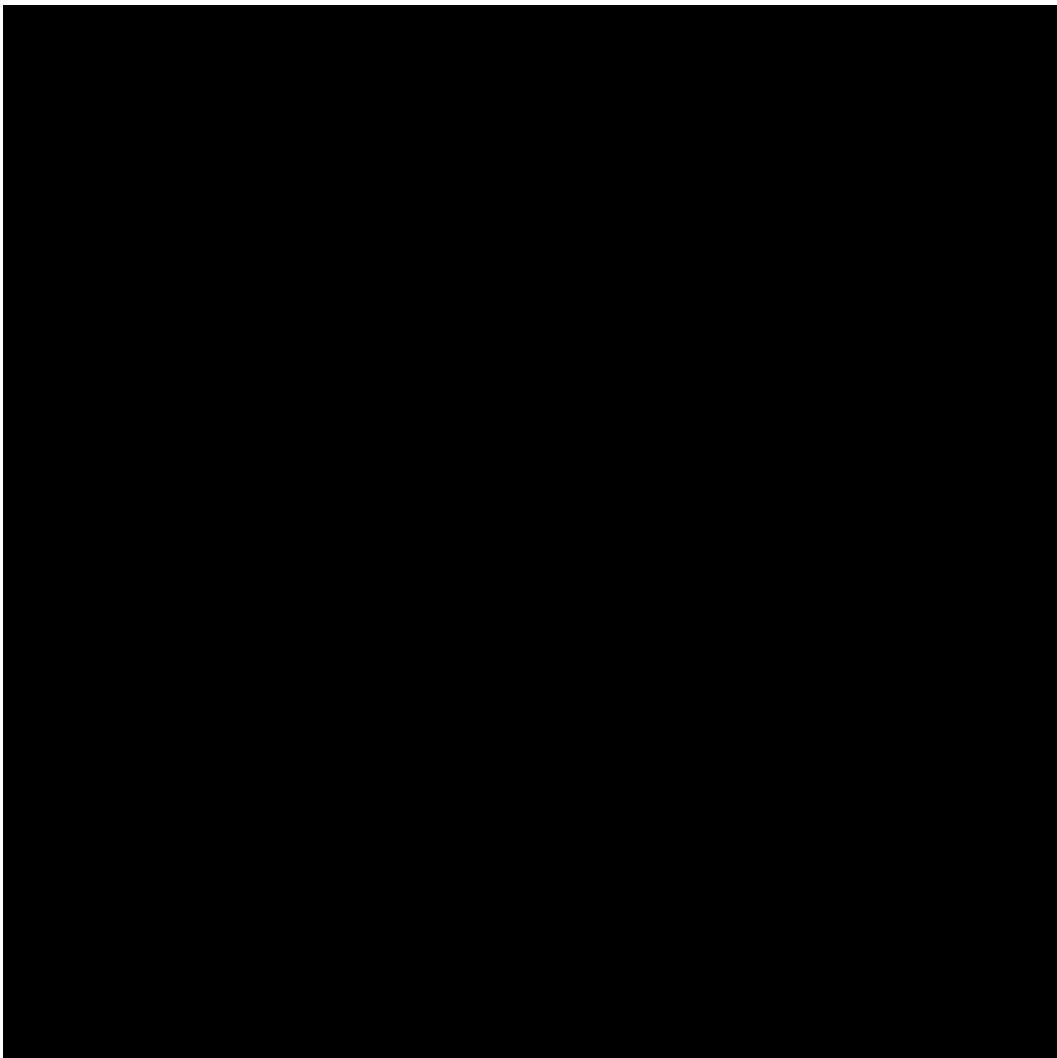


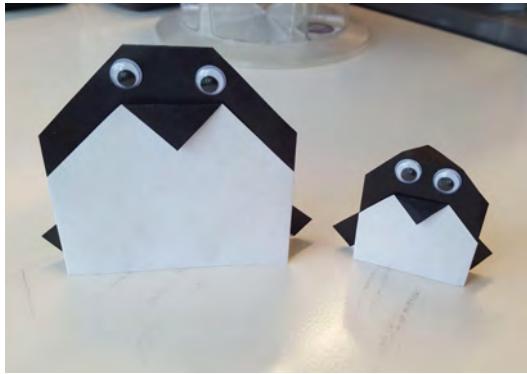


CALIFORNIA
ACADEMY OF
SCIENCES

4. **Flip** the paper over.
5. **Fold** the right corner into the middle of the paper. The corner point of your fold should be in line with the top point of the paper. You can use a ruler to align the fold to the paper's center.
6. **Repeat** step 5 for the left corner. These will be the penguin's wings.
7. **Fold** each wing back on itself, positioning them so that a small tip of the black paper is peeking out.
8. Finally, **flip** your penguin over and **glue** on some googly eyes. If you don't have any, cut out some circles of paper and tape them on.
9. To finish, **fold** the top part of the penguin's head to make it flat. Find a nice place to put your penguin!
10. Repeat steps 2-9 with the smaller black square to make a baby penguin.







Origami Pingüino

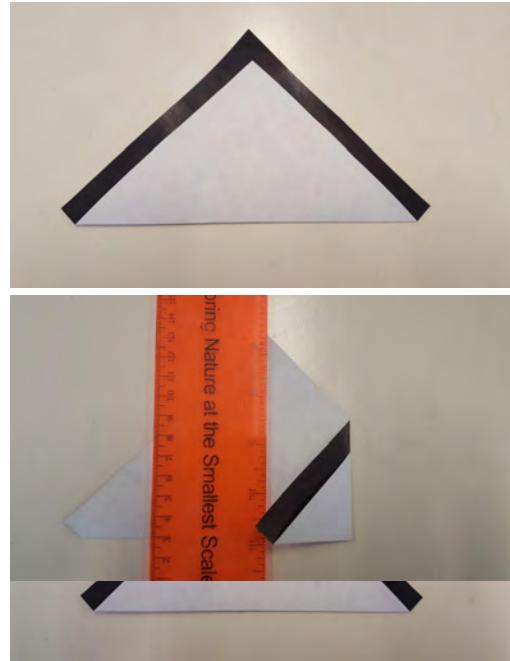
¡No todos los pingüinos viven en la nieve! Solo dos especies, el pingüino emperador y el pingüino Adelia, viven toda su vida en el continente antártico. Pero no importa dónde vivan, todos los pingüinos nadan para atrapar sus presas (incluyendo peces, calamares o crustáceos) y tienen su coloración característica de blanco y negro. Esta es una adaptación útil llamada contrasombreado, que es una forma de camuflaje que les ayuda a esconderse en el océano abierto. Celebra estas aves no voladoras haciendo tu propio pingüino de origami blanco y negro.

Materiales

Ojos googly
Pegamento
Regla
Cuadrados negros (página 2)

Instrucciones

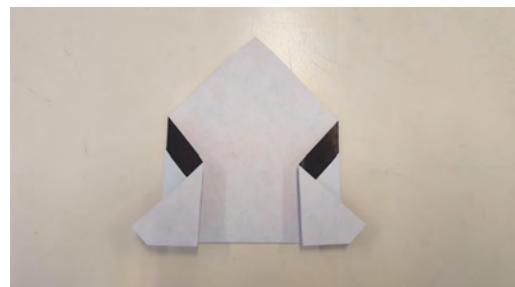
- Corta** ambos cuadrados negros en la última página. Uno será un pingüino adulto y el otro un polluelo de pingüino. Siga las mismas instrucciones para ambos.
- Coloca** el grande cuadrado negro diagonal en frente de ti y **dobla** la esquina inferior hacia arriba. Debe haber un espacio notable entre los dos pliegues blanco y negro, como se muestra en la foto. Recuerda arrugarla bien.
- Dobla** una pequeña sección de la esquina blanca hacia abajo para hacer el pico del pingüino.
- Voltea** el papel.



5. **Dobla** la esquina derecha en el centro del papel. El punto de la esquina del pliegue debe estar alineado con el punto superior del papel. Puedes utilizar una regla para alinear el pliegue con el centro del papel.



6. **Repita** el paso 5 para la esquina izquierda. Estas serán las alas del pingüino.



7. **Dobla** cada ala sobre sí misma, colocala de modo que una pequeña punta del papel negro se asome.

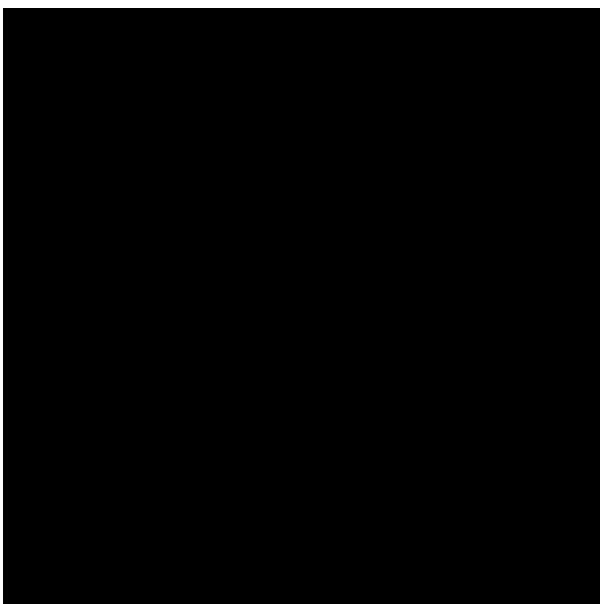
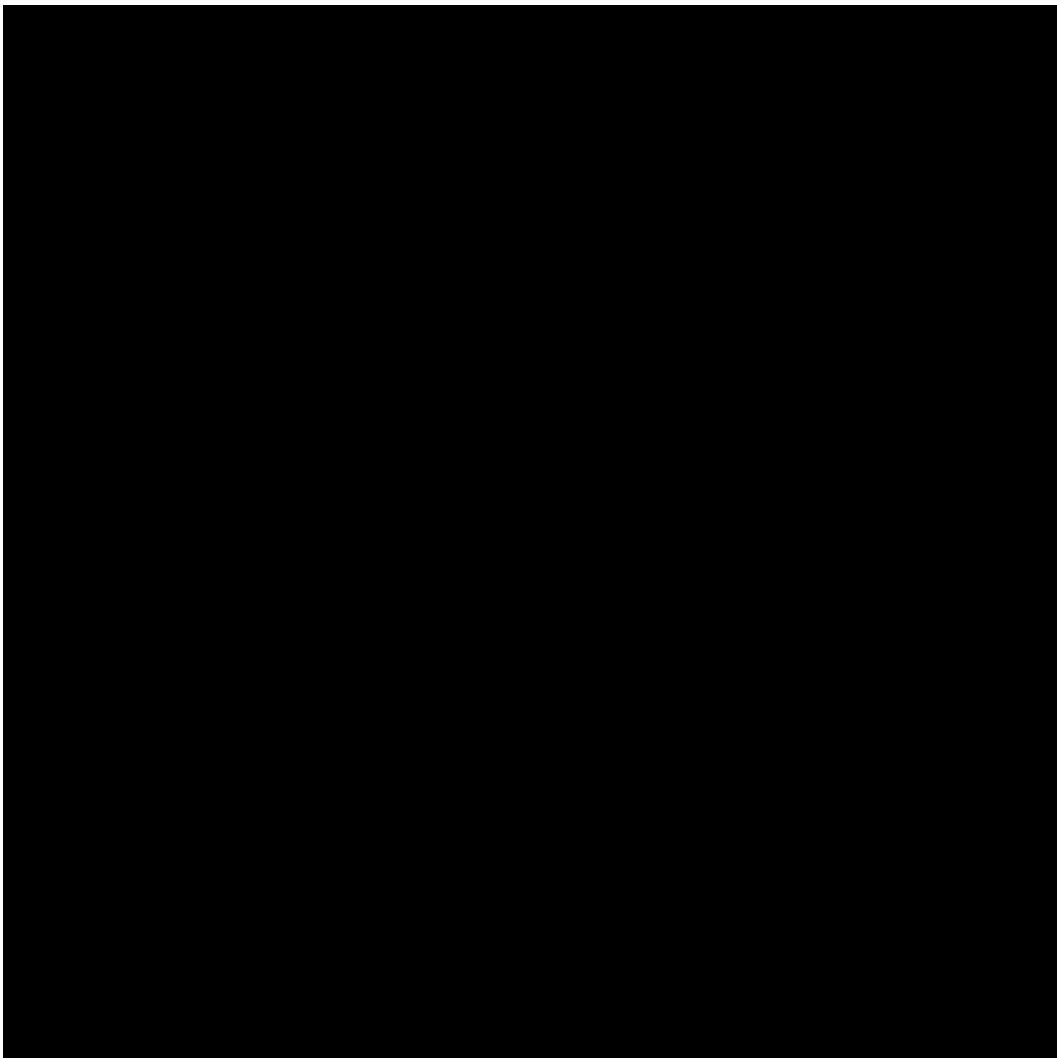


8. **Da le vuelta** a tu pingüino y pega algunos ojos googly. Si no tienes, corta círculos de papel y pégalos con cinta adhesiva.



9. **Dobla** la parte superior de la cabeza del pingüino para hacerla plana. Encuentra un lugar agradable para poner a tu pingüino!

10. **Repita** los pasos 2-9 con el cuadrado negro más pequeño para crear un pingüino.





Snowy Owl Mask

Snowy owls are found in the snow-covered Arctic. They have excellent eyesight and hearing that they use to hunt for small rodents, rabbits, other birds, and even fish. Make a snowy owl mask and imagine using your senses to find your lunch—or explore the world around you.



Materials

1 owl face template (page 2)

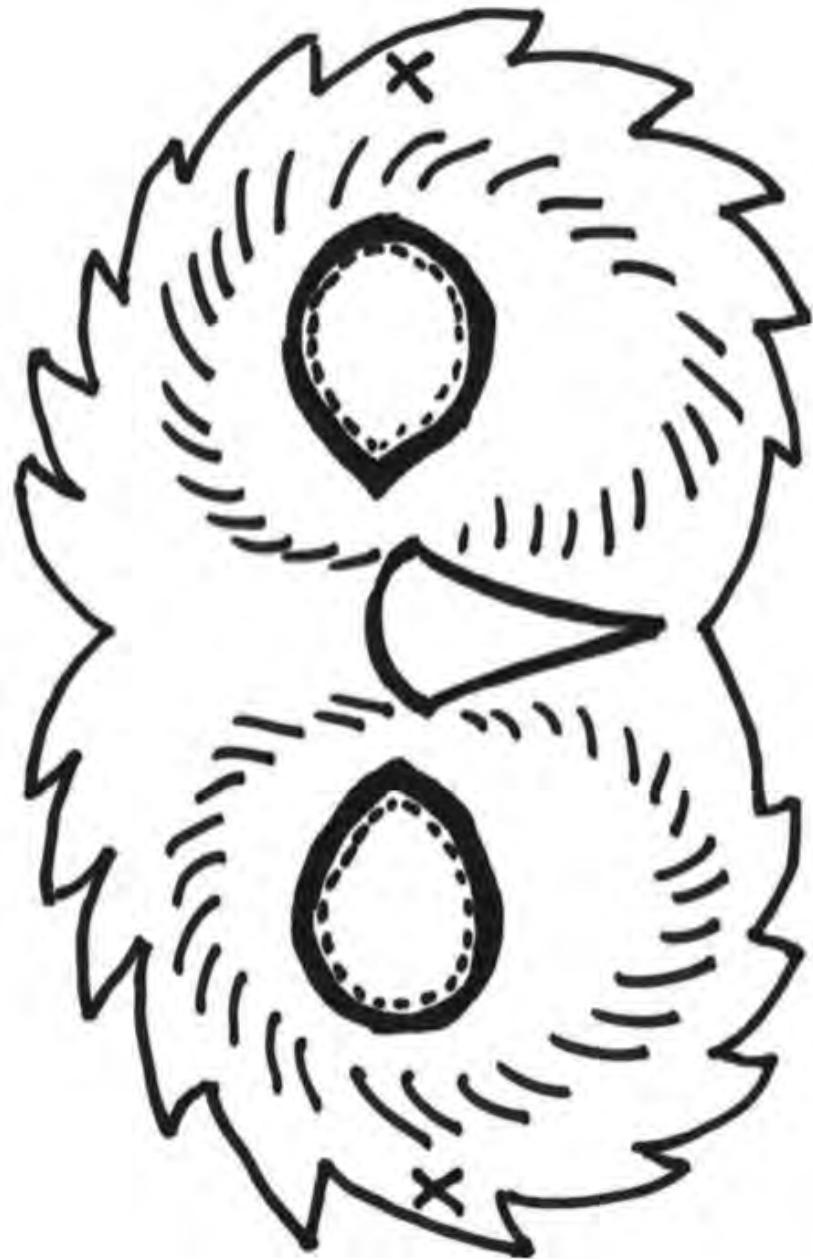
Scissors

Yarn

Hole punch (optional)

Directions

1. **Print out** the owl template on page 2.
2. **Cut out** the owl along the edge of the template.
3. **Cut** along the dotted lines on the owl's eyes to make eye holes.
4. **Punch one hole** on each side of the mask where an X is, using a hole punch or scissors.
5. **Cut** two pieces of yarn, and **tie** one piece to each hole on the sides of the mask.
6. **Hold** the owl mask on your face so you can see through the eye holes, and then **tie** the yarn strings behind your head to hold the mask in place.



Sugar on Snow



How do trees survive the winter cold? They can't get up and walk to a warmer spot, and they don't put on coats! Some trees will crack and pop as the water inside their trunks gets too cold and freezes. To handle this icy challenge, some trees slowly remove most of the water from their trunk, so there is less to freeze. Other trees go a sweeter route, and start making sugar!

When the tree's sugar dissolves in the water stored in its trunk, the water's freezing point is lowered. That means the tree's trunk needs to get a lot colder than usual before its water will turn into ice.

Maple trees are famous for the sweet sap they make in winter to keep their water from freezing. Humans drill small holes into some types of maple tree trunks and collect the sap in buckets. The sap is then made into delicious maple syrup! Celebrate winter and the trees that survive it with this sweet and snowy maple recipe.



Materials

Serves 8:

1 quart pure maple syrup
1 cup (2 sticks) butter

1 tub of packed snow, well-crushed ice, or vanilla ice cream
Large pot
Candy thermometer
Serving bowls
Spoon

Serves 4:

4 ounces pure maple syrup
2 ounces butter

Directions

1. *With an adult's help, heat* the syrup and butter in a large pot over medium heat, watching carefully. Turn the heat down if it looks like it might boil over.
2. **Put** the candy thermometer *carefully* in the syrup and butter mixture.
3. **Read** the candy thermometer's results. Once it reaches 234° F, let it cool slightly.
4. **Test** your mixture by dipping a table spoon into the pot, and drizzling some syrup over the snow. If your syrup sits on top of the snow, and clings to a fork like taffy, it is ready!
5. **Scoop** your snow, crushed ice, or ice cream into the serving bowls.
6. **Drizzle** your syrup onto each scoop.
7. **Enjoy** your maple syrup on ice dessert!

