

# WELCOME EDUCATORS!

## IMAX TO THE ARCTIC

The new documentary adventure *To The Arctic*, from Warner Bros. Pictures, IMAX Corporation and MacGillivray Freeman Films, takes students on an extraordinary journey to the top of the world where they will experience the ultimate survival tale of a mother polar bear and her two seven-month-old cubs as they navigate the changing Arctic wilderness they call home.

We are pleased to provide you with engaging educational activities and a classroom poster as a complement to the film. Created by Warner Bros. Pictures and IMAX Corporation, these cross-curricular activities (for grades 3-5) address not only science, but also language arts and mathematics standards. You may also extend students' learning opportunities by booking a field trip to see *To The Arctic*.



|  | <b>ACTIVITY SHEET 1:<br/>Arctic Arithmetic</b>  | <b>ACTIVITY SHEET 2:<br/>Arctic Antics</b>   | <b>ACTIVITY SHEET 3:<br/>Arctic Star Stories</b>   |
|--|---|--|--|
| <b>Standards</b>   | <p><b>NSES Standard:</b> Populations and ecosystems</p> <p><b>Common Core Math Standards:</b> 3.NF.1., 3.MD.3.</p> <p><b>Common Core ELA Standards:</b> RI.3.7., RI.4.7.</p>  | <p><b>NSES Standards:</b> Characteristics of organisms; Organisms and environments; Diversity and adaptations of organisms</p> <p><b>Common Core ELA Standards:</b> RI.3.10., RI.4.10., RI.5.10.</p> | <p><b>NSES Standard:</b> Objects in the sky</p> <p><b>Common Core ELA Standards:</b> RL.3.10., RL.4.10., RL.5.10.; W.3.3., W.4.3., W.5.3.</p>  |
| <b>Lesson Objectives</b>   | Students will interpret tables and graphs to learn more about a polar bear's habitat.   | Students will identify how physical adaptations help creatures survive in the Arctic.  | Students will read an Inuit legend and then be inspired to write their own creative narrative, in the style of a legend.   |
| <b>Media-rich Lesson Extensions</b>  | Use Google Earth ( <a href="http://www.google.com/earth">www.google.com/earth</a> ) to explore the Arctic Circle in real time. Track actual polar bears at <a href="http://www.arctichome.com/web/index.html">www.arctichome.com/web/index.html</a> . | Use PowerPoint, Keynote, or <a href="http://www.smilebox.com">www.smilebox.com</a> , to create a slideshow of images detailing Arctic animals' physical adaptations.                                 | Have students use a free online comic strip creator like <a href="http://www.makebeliefscomix.com">www.makebeliefscomix.com</a> to bring their legends to life. Or, they can use Microsoft Word Publisher to create unique layouts to publish their legends. |
| <b>Related BrainPOP Animated Shorts (<a href="http://www.brainpop.com">www.brainpop.com</a>)</b> | Arctic Tundra – the hairs in your nose will freeze!   | Glaciers – a huge mountain of ice!   | Global Warming – the world is heating up!  |

Activity Sheet 1 answers: -30°F, -34°C; 25,000 polar bears; seals; A; Bonus: 90 cubic feet. Activity Sheet 2 answers - Who Am I?: 1B, 2D, 3C, 4A

For additional educational resources, visit [www.imax.com/tothearctic](http://www.imax.com/tothearctic).

### BOOK AN IMAX FIELD TRIP TODAY! Immerse your students in an unforgettable learning experience.

Each of the activities in this Educators' Guide provides learning opportunities connected to the film, *To The Arctic*. IMAX films are ideal teaching tools that:

- present new knowledge in a powerful, popular medium
- inspire thoughtful and lively class discussion
- motivate students for extended learning

Easily arrange your field trip by contacting your local IMAX theatre. For locations near you, visit [www.imax.com/tothearctic](http://www.imax.com/tothearctic).

ACTIVITY 1:

NAME: \_\_\_\_\_

# ARCTIC ARITHMETIC

As seen in the IMAX film, *To The Arctic*, polar bears make their home in the Arctic Circle. An organism's habitat must include four elements: food, water, shelter, and space to raise their young. This "Land of Extremes" is known for its cold, harsh climate.

Use the thermometer to the right to figure out the average winter temperature in the Arctic. Brrr!



ANSWER: \_\_\_\_\_

Read the following pictograph below. Use the key to figure out approximately how many polar bears live in the Arctic Circle.

ANSWER: \_\_\_\_\_

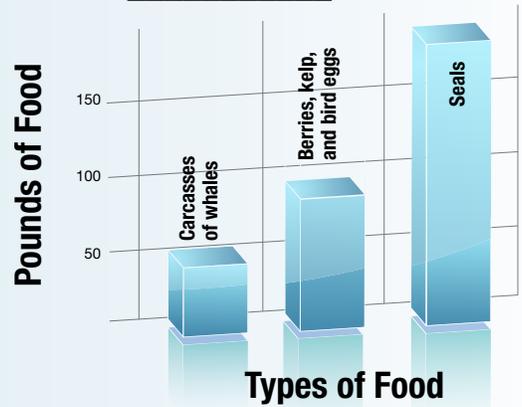


## WHAT IS A POLAR BEAR'S FAVORITE FOOD?

Polar bears have a favorite food, one of which can give a polar bear a week's worth of energy. However, a polar bear is opportunistic, meaning it will eat whatever it can find.

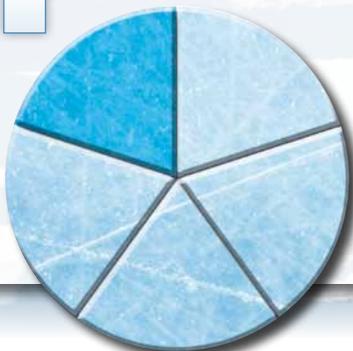
Using the information on the bar graph below, which is a polar bear's favorite food?

ANSWER: \_\_\_\_\_



The Arctic Circle covers 1/5 of the Earth's surface. Check which image below correctly shows 1/5.

A:



B:



## BONUS MATH QUESTION:

How much snow can fit inside a polar bear's den that is 6 feet long by 5 feet wide by 3 feet tall?

ANSWER: \_\_\_\_\_

# ARCTIC ANTIGS

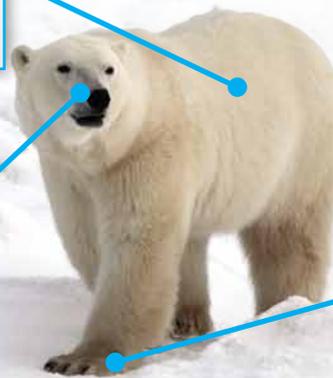
Although the Arctic makes for a tough habitat, the animals have adapted to survive in unique ways, as seen in the IMAX film, *To The Arctic*.

**Physical adaptations** are those changing characteristics that help an organism survive in its habitat.

A polar bear's fur really isn't white but transparent, which reflects the sunlight. The polar bear's black skin helps absorb the sun's heat.

A polar bear has a strong sense of smell. It can smell a seal from up to 20 miles away! Its nostrils close when swimming.

A polar bear's wide paws can measure 30 cm in diameter. The webbed forepaws help it swim while the hind legs act as a rudder.



## WHO AM I?

Try to match the Arctic animals listed below to their physical adaptation. Draw a line from each animal listed on the left to a description on the right. You may want to find images of the animals online to help you decide.

1 Arctic Fox



2 Tundra Bumblebee



3 Caribou



4 Walrus



**A** A thick layer of blubber helps keep me warm in the Arctic waters. You can tell my body temperature by the change in my skin color!

**B** Come spring, I molt, losing my long white fur when the snow is gone, and I grow short brown fur instead.

**C** My large, concave hooves help me balance on top of the deep snow. They also help me paddle when I swim!

**D** My flight muscles seem to shiver when I fly, which helps me keep warm in the cold air temperatures.

## BREAKING NEWS: NEW ARCTIC ANIMAL DISCOVERED!

You have just returned from adventures up North, and while you were there, you found a new species surviving in the extreme conditions of the Arctic Circle.

*Sketch what this creature looks like and label at least three physical adaptations that help it not only survive, but thrive in this unique habitat!*



# ARCTIC STAR STORIES

Have you ever heard of the **constellation**, Orion? Most people search the night sky for Orion's "belt", a series of three stars in a row. However, the **Inuit**, a Native American group (as seen in the IMAX film, *To The Arctic*), have a different **legend** about these three stars which involves a battle with a polar bear...

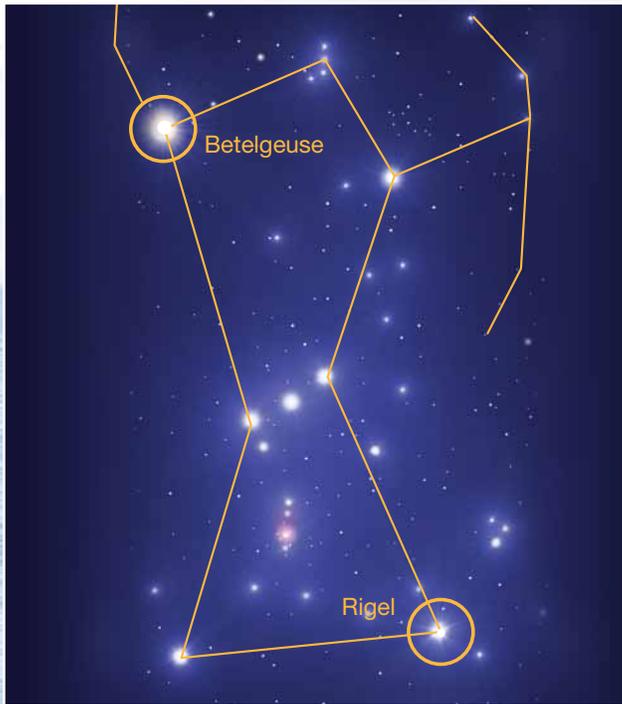
Once there was a seal hunter who lived with his two sons along the edge of the sea. The youngest boy wanted to be just like his older brother and his father, but he never quite felt as great a hunter as they were.

One night, he decided to prove his skill, so he took his three dogs and hitched them to a sled. Soon they came to the edge of the sea ice and looked out toward the darkness. The boy realized that he needed to hunt something bigger than a seal; he wanted to kill a polar bear! There were many **ice floes** drifting on the water, but suddenly, one seemed to move – it was a polar bear! The boy crept slowly, gathered his confidence and raised his spear. He threw the spear and hit the

polar bear's paw. As the polar bear rose up in rage, the boy realized that he had thrown his one and only spear and was now without protection. The boy raced back to his sled just before the ice broke up leaving the boy, his sled, and his dogs on one chunk and the polar bear on the other. The two ice floes floated out to sea.

When the boy's father and older brother woke up, they were heartbroken to discover that the young boy was gone. They vowed never to put out their house fire until the young boy and his dogs returned home.

To this day, you can find the boy's story in the stars. You can see the light from the father's fire above the horizon in the night sky (**aurora borealis**). If you look to the stars, you also can find the wounded polar bear (the red star Betelgeuse) and the three dogs (the three stars in Orion's Belt), and still hiding behind the three dogs is the little boy (the blue star Rigel).



## KEY VOCABULARY

- **constellation:** a group of stars that form a pattern
- **Inuit:** a Native American group living in parts of Alaska, Canada, and Greenland (formerly referred to as "Eskimos")
- **legend:** a story handed down, often by oral tradition, over several generations
- **ice floe:** a floating chunk of sea ice
- **aurora borealis:** a display of bright lights caused naturally by charged particles colliding with gases in the atmosphere; often called the "Northern Lights" as they appear in regions far north



Constellations are groups of stars that form patterns. For thousands of years, stories have been tied to constellations. Currently, there are 88 recognizable constellations.

*Look at the stars to the left. What "new" constellation do you picture? What shape do you see? How did it get in our night sky? On a separate piece of paper, write your own legend explaining the story behind your constellation.*

*Be sure to give your constellation a name!*