Name _____ Date _____

Built for the cold

How polar animals keep warm in freezing, windy places.

1 Learn



The Arctic in the far north and Antarctica in the far south are icy and windy. Polar bears live in the Arctic; penguins live in the south. They never meet!



Polar bear

- thick fat called **blubber**
- thick fur; small ears
- bumpy pads grip the ice



Arctic fox

- small ears, short legs
- fur turns white in winter
- curls its tail round itself



Emperor penguin

- fat and thick feathers
- huddles in big groups
- takes turns in the middle



desert



Arctic

Worked example: why does the Arctic fox have small ears?

1. Body heat escapes from parts that stick out, like ears and legs.

2. Big, thin ears lose lots of heat. That cools a desert fox, but would chill an Arctic fox.

3. So small ears and short legs help the Arctic fox **keep heat in**.

Flip's tip: blubber is a thick layer of fat under the skin. It works like a warm blanket on the inside. Seals and whales have it too.

Warm up: ring the better polar adaptation in each pair.

thin fur or thick fur

big ears or small ears

a layer of blubber or very little fat

smooth paws or bumpy, furry paws

Grown-ups: under its fur, a polar bear's skin is black, which helps it soak up warmth from the sun. Ask: "Which adaptations are body features, and which are behaviours?"

Name _____ Date _____

2 Try it together a child and a grown-up, about 10 minutes



The blubber glove

You need: a bowl of cold water with ice cubes, 3 sandwich bags, about 4 big spoonfuls of soft butter, margarine or lard, a spoon and a towel.

1. Spoon the fat into one bag. Push a second bag inside it, then squish the fat around so it makes a thick layer **between** the two bags. This is your blubber glove.
2. Put one hand inside the inner bag, so your hand stays clean. Put your other hand in the empty third bag.
3. Predict: which hand will feel cold first?
4. Dip both hands into the icy water together. Take them out as soon as either one feels too cold, then dry them.

Hand	How did it feel?	Felt cold first? (tick)
Blubber glove		
Empty bag		

Grown-ups: fat lets heat pass through slowly, so it insulates: the hand in the blubber glove stays warm for longer. A polar bear's blubber keeps it warm even when it swims in icy water.

3 Practise

A. Draw a line to match each adaptation to how it helps.

a polar bear's white fur ●	● grip slippery ice without sliding
a polar bear's black skin ●	● stay out of the freezing wind
bumpy pads on its paws ●	● creep up on seals without being seen
penguins huddling ●	● soak up warmth from the sun
Arctic plants growing low ●	● share body warmth in the cold

Built for the cold

Name _____ Date _____

B. An Arctic fox is brown-grey in summer and white in winter. How does this help?

C. Emperor penguins huddle in big groups. Is this a feature or a behaviour? How does it help?

D. Look at the two foxes. Write which one lives in the **desert** and which in the **Arctic**. Explain using the word **heat**.



Fox A



Fox B

_____ _____

E. Invent an animal for the Arctic ice. Give it **two** adaptations and say how each helps.

Challenge

Ava says, "Big, fluffy ears would keep an Arctic fox warm." Is she right? Explain.

I can… Tick when you can.

- [ ] explain how blubber and fur keep animals warm
- [ ] explain why small ears save heat
- [ ] name a polar behaviour, like huddling