FROM BRRR TO BURROW

TEACHER GUIDE

PLANNING

Here's a suggested schedule for this kit! The activities should be completed in order, but you can choose when the lessons take place over time.

ACTIVITY INFORMATION	SECTION (S)	TIME REQUIRED	DAY/ LESSON
ACTIVITY 1: COVER ME UP Discover the insulating power of fat. Total time: 45 min	☐ Fat Layers	45 minutes	Day 1
ACTIVITY 2: FUR AND FAT Learn how fat and fur keep artic animals warm. Total time: 1 h	☐ The Space Between	30 minutes	Day 2
	☐ Staying Warm ☐ Show What You Know	30 minutes	Day 3
ACTIVITY 3: SIZE MATTERS Test how size and shape make a difference in how quickly an animal loses body heat. Total time: 1 h	☐ Shape and Size	30 minutes	Day 4
	☐ Does Size M...	30 minutes	Day 5
ACTIVITY 4: DIGGING DEEP Decide if it really is ...			

activity 1

COVER ME UP

Many animals live in cold parts of the world, such as the Artic and Antarctic. In this activity, your student will discover one way those animals stay warm.

FAT LAYERS

☑ PREPARATION AND SUPERVISION

- In this experiment, your student will create a fat simulation to test how well fat insulates animals against the cold.
- You can use a watch, stopwatch, or an application on a phone or computer to record how long students can keep their hand in the ice water for.
- To get all of the petroleum jelly out of the tube, you can cut off the back end and squeeze or scoop out what is remaining in the tube. Be aware that the cut tube could have a sharp edge.

MULTIPLE AGES AND ABILITIES:

If you are working with multiple students, you can repeat this experiment with butter or vegetable shortening.
If you are working with students who do not enjoy the tactile sensations from jelly-like substances, you can use a thermometer in place of their hand and measure temperature change instead of how long their hand is comfortable in the ice water.

REFLECT

Question 1: Circle the layer you were able to keep in the ice water the longest. Put a square around the layer you pulled your hand out of the quickest.

Bare hand **Two bags** **Two bags with petroleum jelly**

Question 2: What are two things you noticed during this experiment?
Answer: Students should have noticed that the two bags were warmer than their bare hand, but only slightly, and that adding petroleum jelly between the bags was the warmest. They should also notice that the bags and petroleum jelly are barriers or layers.

Question 3: What are two questions you have about this experiment?
Answer: Students might question why the petroleum jelly and bags provide warmth. Students may also wonder what else they could use to cover their hand with to be warm in the ice water.
It is possible for your student to begin making connections to other animals and question what animals use this type of warmth.

activity 3

SIZE MATTERS

Birds come in many shapes and sizes that allow them to survive around the world even though they do not have thick layers of fat or fur.

In this activity, students will discover how shape and size keeps animals alive.

✓ ***LEARNING GOALS:***
I can observe what is the same and different about organisms in habitats.

SHAPE AND SIZE

MULTIPLE AGES AND ABILITIES:

If you are working with multiple students, each student can create one of the two clay balls and monitor the thermometer in their bag. You could also have one student lead the "Round or Flat" experiment, while the other leads the "Big or Small" experiment.

ROUND OR FLAT

? **Question 1: Circle the clay that cooled fastest.**
Answer:

Round **(Flat)**

? **Question 2: Why do you think it cooled down fastest?**
Answer: The flat ball cooled down faster because there was more space for it to lose heat from.

How to Help: *Your student may not know exactly why it cooled down faster, but their answer should reflect the change in shape.*

BIG OR SMALL

☑ PREPARATION AND SUPERVISION

• For the best experience, make sure the large ball is at least double the size of the small ball.

? **Question 1: Circle the clay that cooled fastest.**
Answer:

Big **(Small)**

? **Question 2: Why do you think it cooled down fastest?**
Answer: The small ball cooled down faster because it was smaller and wasn't able to hold onto heat as well.

How to Help. *Your student may not know exactly why it cooled down faster, but their answer should reflect the difference in size between the two balls.*

WONDER

SCIENCE UNLOCKED

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Kit	SU-BRRBUR
Instructions	IN-BRRBURT
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