Mystery science

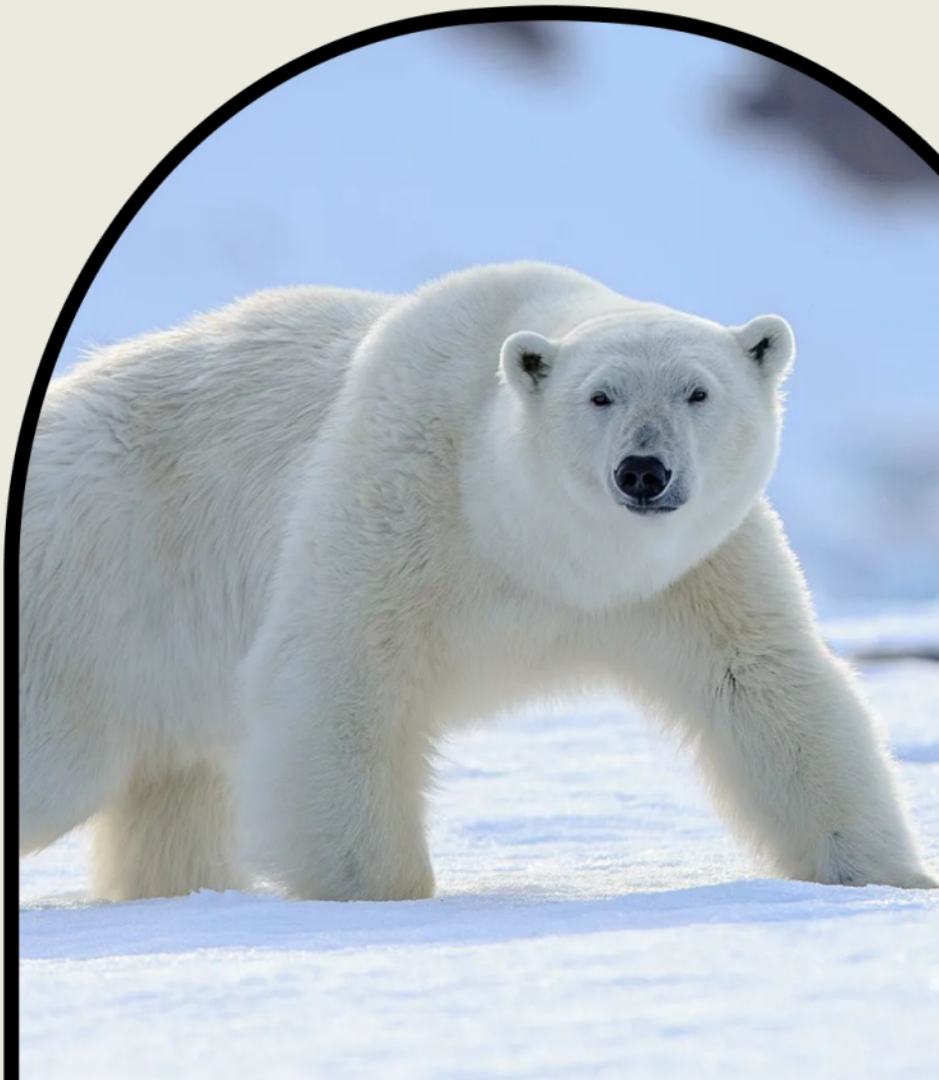
# Anchor Layer Teacher Guide

A curriculum companion for Anchor Layer users

## Grade 1

# Animal Traits & Survival

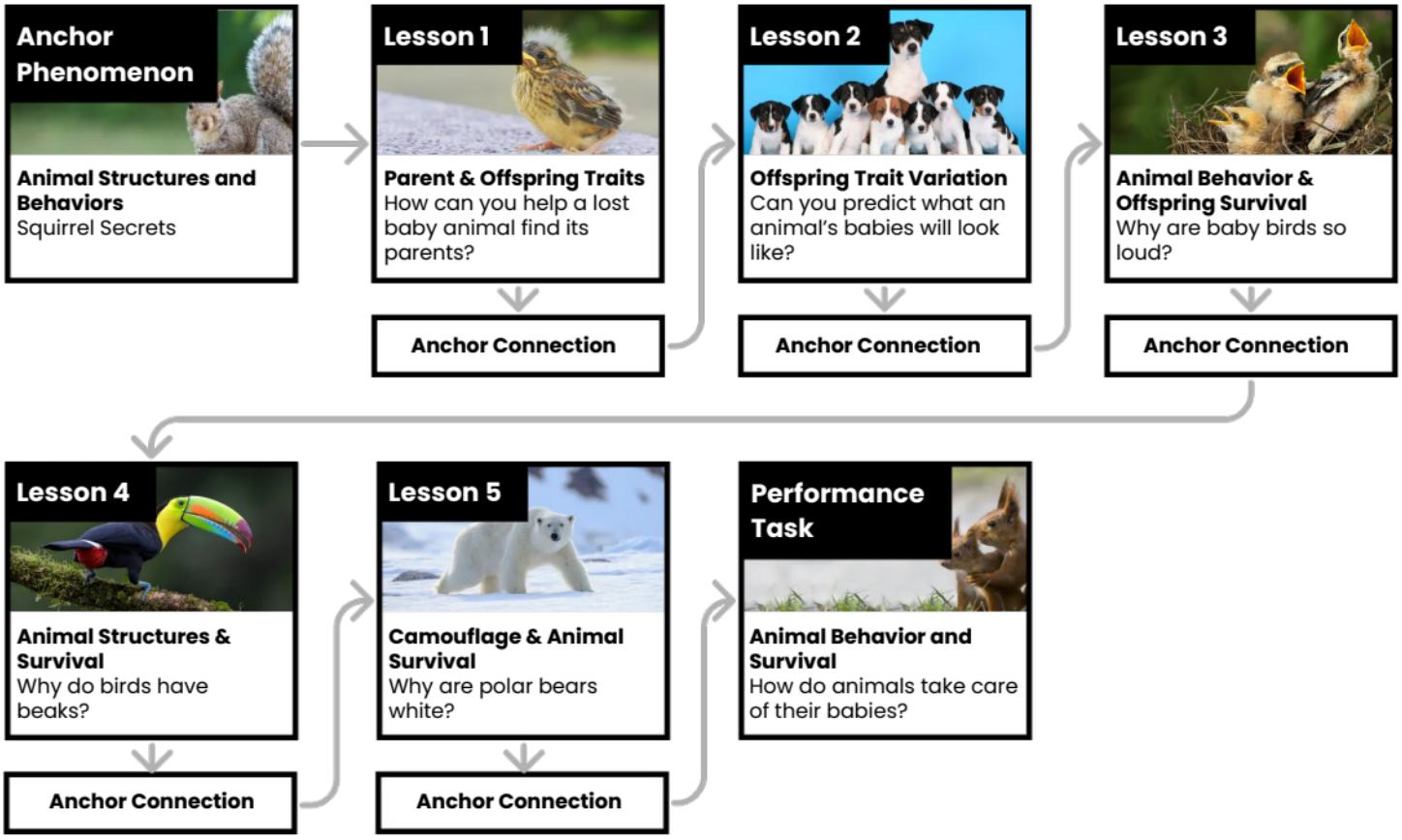
Unit Web Link • Pacing Guides • Other Units



## Unit Summary

In this unit, students explore the traits of adult and baby animals! Students make observations of parent animals and their offspring, determining how they are similar and different. They explore certain behaviors that help offspring survive. Students also investigate how the traits of animals are essential for their growth and survival.

| Performance Expectations | Science & Engineering Practices | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|---|
| • 1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.<br>• 1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.<br>• 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. | • Constructing Explanations and Designing Solutions<br>• Developing and Using Models<br>• Planning and Carrying Out Investigations<br>• Analyzing and Interpreting Data<br>• Obtaining, Evaluating, and Communicating Information<br>• Engaging in Argument from Evidence | • LS3.A: Inheritance of Traits<br>• LS3.B: Variation of Traits<br>• LS1.A: Structure and Function<br>• LS1.B: Growth and Development of Organisms | • Structure and function<br>• Patterns |



## Anchor Phenomenon Background

How can squirrels live in such a huge range of places on Earth?

Squirrels are truly amazing animals. Some types of squirrels can be found living in trees, while others can be found living underground. Some squirrels live in hot deserts, while other squirrels live in snowy forests. But squirrels are relatively small animals, who don't have large teeth, or claws, or wings, or other obvious adaptations that would allow them to be successful in many different places. What is it about squirrels that makes them so successful?

Squirrels have a few adaptations that take care of their most basic needs of food, safety from predators, and shelter.

One of the most well-known squirrel behaviors is the tendency to save food. In fact, the word "squirrel" can be used as a verb to describe the process of saving things for later. When squirrels have access to more food than they can consume at one time, they will save the food for later. Some squirrels do this by placing the food inside of their dens, while other squirrels will scatter the food in shallow holes around the area in which they live. They can then rely on this stored food during other times of year when they may not have any other food source.

Squirrels do multiple things to remain safe from predators. Their coloration tends to blend in well with their surroundings, and if a predator does spot them, they are fast both on the ground and in the trees. Adult female squirrels also go to great lengths to care for their young. This includes doing things such as carrying their young in their mouth if they need to quickly move them to a new place.

Squirrels also build a variety of shelters for themselves, ranging from building large nests called dreys in the tops of trees, to occupying hollow cavities within tree trunks and logs, to digging large burrows underground. These shelters provide a place to rest, raise young, store food, and/or survive harsh weather conditions.

## Anchor Phenomenon: Squirrel Secrets
Animal Structures and Behaviors

**Anchor Phenomenon**
15 mins

**Guided Inquiry**
15 mins

### Anchor Phenomenon Overview

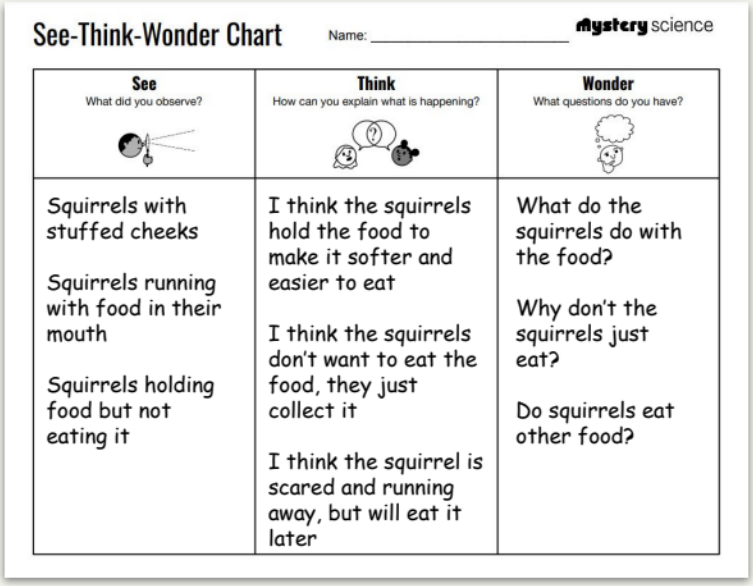
Note: This lesson is part of this unit's Anchor Layer. If you have the Anchor Layer turned on, we recommend teaching all lessons in the remainder of this unit in order.

The anchor phenomenon for this unit is the amazing fact that squirrels are found living across a huge range of habitats around the world. Squirrels have special body structures and behaviors that help them accomplish this.

During the introduction, students generate observations and questions about the phenomenon and create a list of possible explanations for the phenomenon. Students will use these initial ideas to track how their understanding grows throughout the unit.

### Student Work Samples & Notes

Students will gather clues during and after each lesson in this unit to help them improve their understanding and explanations. It is important to encourage students to recognize that even if they don't know the perfect answer yet, they are going to learn a lot throughout the unit and will have an opportunity to revisit the phenomenon over time.



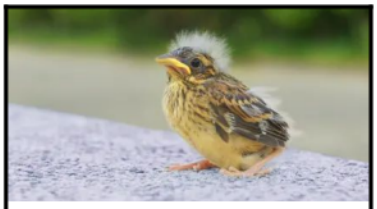
See-Think-Wonder Chart

Name: _____

| See<br>What did you observe? | Think<br>How can you explain what is happening? | Wonder<br>What questions do you have? |
|---|---|---|
| Squirrels with stuffed cheeks<br><br>Squirrels running with food in their mouth<br><br>Squirrels holding food but not eating it | I think the squirrels hold the food to make it softer and easier to eat<br><br>I think the squirrels don't want to eat the food, they just collect it<br><br>I think the squirrel is scared and running away, but will eat it later | What do the squirrels do with the food?<br><br>Why don't the squirrels just eat?<br><br>Do squirrels eat other food? |

## Lesson 1: How can you help a lost baby animal find its parents?

Parent & Offspring Traits (pg 1 of 2)



**Exploration**
16 mins

**Hands-On Activity**
30 mins

**Wrap-Up**
4 mins

**Anchor Connection**
10 mins

**Assessment**
20 mins

### Overview

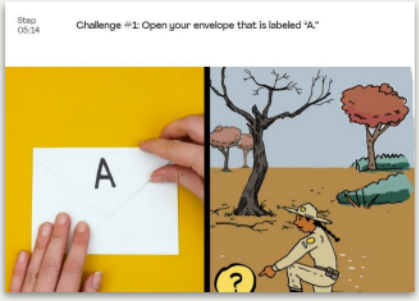
In this lesson, students make observations of baby animals and their parents, gathering evidence that they look similar because they share many of the same traits.

In the activity, Baby Bird Rescue, students help identify lost baby birds based on observations of their specific traits.

### Activity Notes

We suggest preparing the Bird Cards and Envelopes for the Baby Bird Rescue activity in advance.

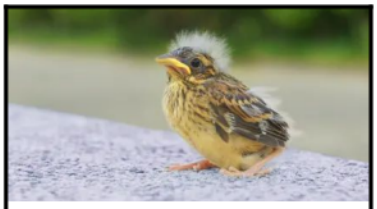
We suggest students work in pairs.




***Anchor Connection on Next Page***

## Lesson 1: How can you help a lost baby animal find its parents?

Parent & Offspring Traits (pg 2 of 2)



**Exploration**
16 mins

**Hands-On Activity**
30 mins

**Wrap-Up**
4 mins

**Anchor Connection**
10 mins

**Assessment**
20 mins

### Anchor Connection

In this lesson, students observed the traits of various types of animals. Some types of squirrels have a very interesting trait: cheek pouches. They use these cheek pouches to carry food. They will see in the next lesson that squirrels carry food so that they can hide it and save it for later.

Students revisit the See-Think-Wonder chart that they worked on during the Anchor Phenomenon. They should understand that parent animals pass their traits to their young. This is true for birds and squirrels.

### Connecting Storyline Question

How do squirrel traits help them survive?

## Lesson 2: Can you predict what an animal's babies will look like?

Offspring Trait Variation

**Exploration**
10 mins

**Hands-On Activity**
30 mins

**Wrap-Up**
15 mins

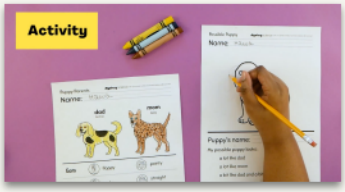
**Anchor Connection**
20 mins

**Assessment**
20 mins

### Overview

In this lesson, students gather evidence that animal offspring look like, but not exactly like, their parents.

In the activity, Possible Puppies, students play a game that models how puppies look similar to their parents, but each puppy can vary in many ways.




### Activity Notes

We suggest students work in pairs.

### Anchor Connection

Physical characteristics are passed down from parents to offspring in many
animals, and this is true for squirrels as well. The behaviors of squirrels are passed down in the same way that physical characteristics are. This includes where they tend to live, depending on if there are tree-dwelling or ground-dwelling.

Students revisit both See-Think-Wonder charts that they worked on during the unit. They should understand that young animals look similar to their parents. However, they don't just look similar—they also act similarly.

### Connecting Storyline Question

How do animals take care of their babies?

## Lesson 3: Why are baby birds so loud?
Animal Behavior & Offspring Survival

**Exploration**
10 mins

**Hands-On Activity**
35 mins

**Wrap-Up**
5 mins

**Anchor Connection**
20 mins

**Assessment**
20 mins

### Overview
In this lesson, students observe a variety of parents and their offspring in order to find patterns of behaviors that help offspring survive.

In the activity, Chirp to Survive, students pretend to be birds, experiencing animal behaviors that help offspring find food and stay safe.

### Activity Notes
This lesson includes two activities.

In the first activity, students pretend to be parent birds searching for “worms” around the classroom to feed to their baby birds.

In the second part of the activity, students pretend to be baby birds and will stay seated in their “nest”.

### Anchor Connection
In this lesson, students made observations of how parent animals care for their young. In the Anchor Connection, students make the same observations for mother squirrels and their young.

Students complete a new See-Think-Wonder chart. They should understand that While young squirrels can walk and climb, mother squirrels can carry their babies in their mouths in order to move them quickly to safety.

### Connecting Storyline Question
How do squirrels stay safe from other animals?

## Lesson 4: Why do birds have beaks? (pg 1 of 2)
Animal Structures & Survival

**Exploration**
16 mins

**Hands-On Activity**
25 mins

**Wrap-Up**
5 mins

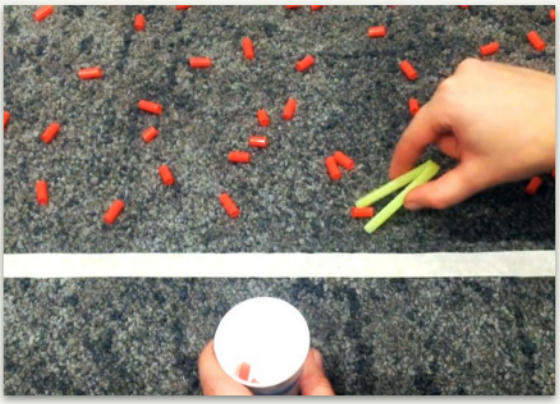
**Anchor Connection**
20 mins

**Assessment**
20 mins

### Lesson Overview

In this lesson, students carry out an investigation to determine the relationship between the shape of different bird beaks and the food each bird eats.

In the activity, Find the Best Beak, students experiment with long pointy beaks that are great for picking up seeds and wide flat beaks that are good for scooping. They discover that different beaks are best for different kinds of food.



### Activity Notes

We suggest students work in groups of four.

This activity works best on a low pile carpet. If your classroom has a smooth floor (such as linoleum), you'll need a bath towel to serve as the work area for each group of 4 students.

We suggest making "beaks" and setting up stations in advance. See the lesson page for more detailed prep instructions.

***Anchor Connection on Next Page***

## Lesson 4: Why do birds have beaks? (pg 2 of 2)
Animal Structures & Survival

**Exploration**
16 mins

**Hands-On Activity**
25 mins

**Wrap-Up**
5 mins

**Anchor Connection**
20 mins

**Assessment**
20 mins

### Anchor Connection

In this lesson, students developed an understanding of the importance of specialized bird mouths. Squirrel mouths are specialized as well. Specifically, their mouths are very good at carrying food. In the case of chipmunks and other ground squirrels, their cheeks are actually large pouches that can be packed with food. Squirrels use their mouths to carry excess food to places where they can store it and eat it later

Students revisit the See-Think-Wonder chart that they worked on during the Anchor Phenomenon. They should understand that birds are not the only animals with specialized mouths. Squirrels have special mouths that help them carry food and save it for later.

### Connecting Storyline Question

How do squirrels keep from being seen?

## Lesson 5: Why are polar bears white? (pg 1 of 2)
Camouflage & Animal Survival

**Exploration**
17 mins

**Hands-On Activity**
25 mins

**Wrap-Up**
8 mins

**Anchor Connection**
30 mins

**Assessment**
20 mins

### Overview

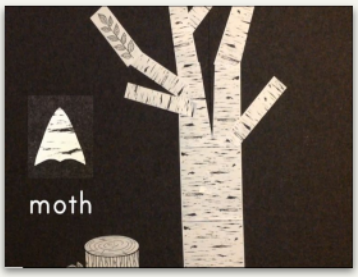
In this lesson, students make observations to construct an explanation of why camouflage is helpful to animals.

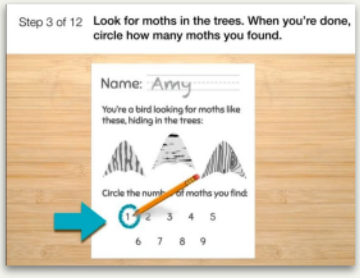
In the activity, Moth Hide and Seek, students test their ability to spot camouflage moths, and then design a camouflage pattern for a moth of their own and hide it in the classroom!

### Activity Notes

We suggest preparing your classroom forest before class. Each tree takes a wall space measuring about 32" wide by 55" tall (about the size of a door).

You are going to hide paper moths for your students to find, and then your students will hide moths for you to find. See the lesson page for more detailed prep instructions.




***Anchor Connection on Next Page***

## Lesson 5: Why are polar bears white? (pg 2 of 2)
Camouflage & Animal Survival

**Exploration**
17 mins

**Hands-On Activity**
25 mins

**Wrap-Up**
8 mins

**Anchor Connection**
30 mins

**Assessment**
20 mins

### Anchor Connection

Camouflage is an important characteristic that helps many living things. Squirrels are no exception. By blending in with their environment, squirrels improve their chances of surviving.

Students will create their own chipmunk camouflage designs, just as they did during the lesson itself with moths. They should understand that squirrels are camouflaged in many different environments. This helps them stay safe.

### Connecting Storyline Question

What are all of the things that squirrels do to take care of their babies?

## Performance Task: How do animals take care of their babies?
Animal Structures and Behaviors

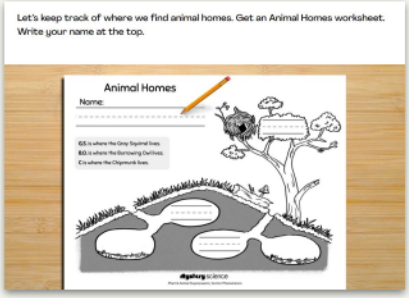
**Unit Review**
10 mins

**Hands-On Activity**
35 mins

### Overview

In this performance task, students will observe and interpret the behavior of different animals to see how they care for their offspring.

After a review of the unit, students will visit the homes of three different animals and see what they do to take care of themselves and their offspring. They will see that some animals can make their homes in very different and surprising places, but they share some behaviors in common with one another.




### Performance Task Notes

Students can work as a class, in small groups, or individually. Each student will need one copy of the Animal Homes worksheet.

### Crosscutting Concepts

*Patterns*: There are many, many different types of animals that live in many, many different types of habitats. By identifying patterns in behaviors, we can develop an understanding of how animals are able to survive and thrive in such a wide range of environments