

Anchor Layer Teacher Guide

A curriculum companion
for [Anchor Layer](#) users

Grade 4

Animal & Plant Adaptations

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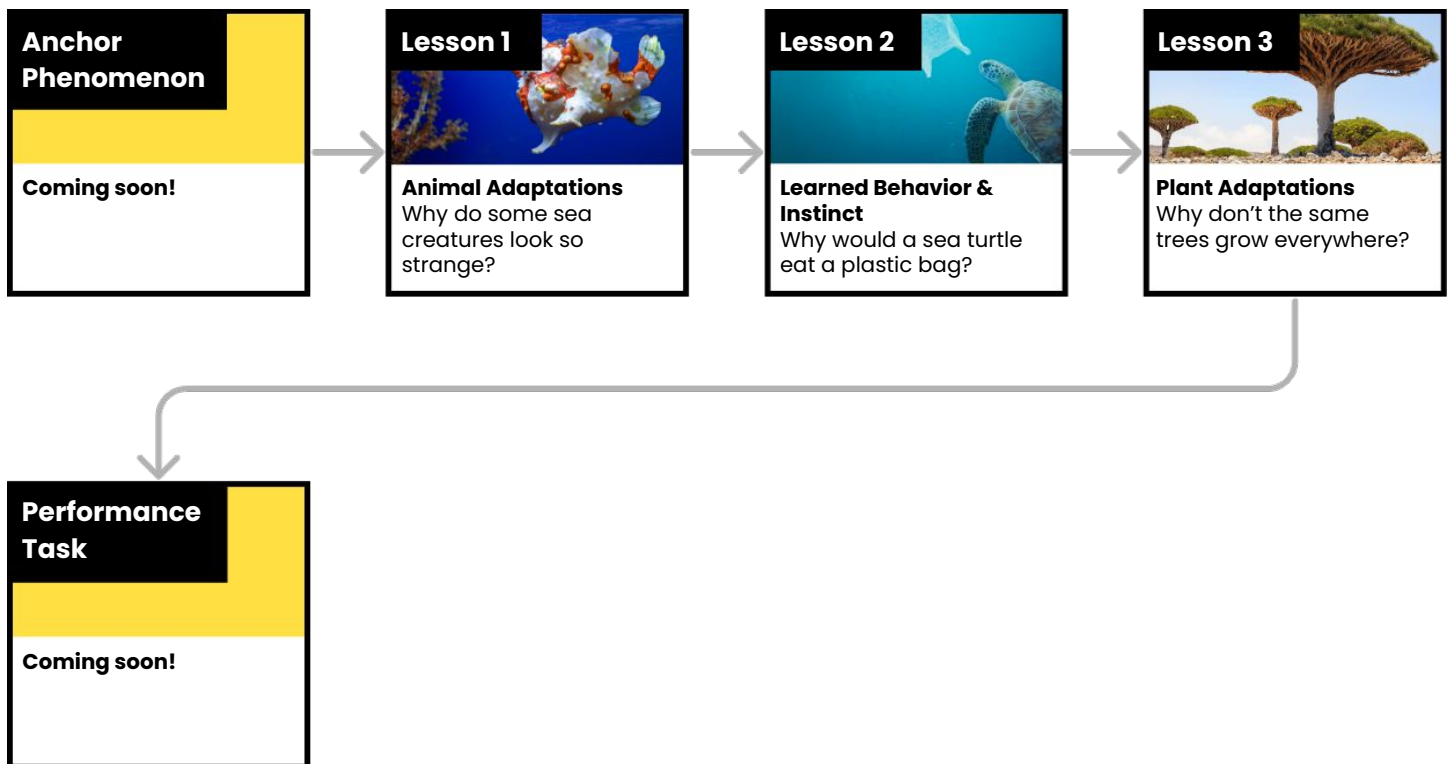
**Note: The Anchor Layer for this unit is
currently in development.**



Unit Summary

In this unit, students explore the adaptations of animals and plants. Students investigate how the external and internal structures of an organism work together as an interconnected system that aid in their growth and survival. They also use models to explore how a combination of instincts and memories influence animal behavior.

Performance Expectations	Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<ul style="list-style-type: none"> • 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. • 4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. 	<ul style="list-style-type: none"> • Engaging in Argument from Evidence • Developing and Using Models • Constructing Explanations and Designing Solutions 	<ul style="list-style-type: none"> • LSI.A: Structure and Function • LSI.D: Information Processing 	<ul style="list-style-type: none"> • Systems and System Models




Lesson 1: Why do some sea creatures look so strange? Animal Adaptations

Overview

In this lesson, students make observations of an underwater animal, a frogfish, in order to collect evidence that its external structures serve specific functions.

In the activity, Frogfish Finder, students use their observations to construct an argument that the frogfish's external and internal structures work together as part of a system to support their growth and survival.



Exploration
10 mins

Hands-On Activity
35 mins


Wrap-Up
10 mins

Activity Notes

We suggest students work in pairs. Homeschool students can work on their own.


Step 02/18 Get your supplies.

EACH PERSON NEEDS:




- field journal (2 pages)
- 1 pipe cleaner

EACH PAIR NEEDS:

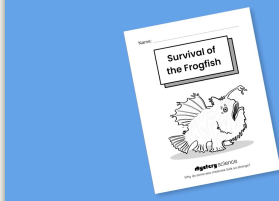


- scissors

Step 03/18 Flip each page over and fold it in half along the gray line so that the words are on the outside. Use your fingernail to make a good crease.



Step 09/18 Discuss what you observed with your partner. Then write your answers to questions 1A and 1B in your field journal.




Lesson 2: Why would a sea turtle eat a plastic bag?

Learned Behavior & Instinct

Overview

In this lesson, students explore how animals receive information through their senses and process that information in their brain, using instincts and memories to guide their behaviors.

In the activity, Raccoon Reactions, students use models to understand how an animal's senses, brain, and memories all work together as a system to influence their behavior and support their survival.



Exploration
10 mins

Hands-On Activity
40 mins

Wrap-Up
10 mins

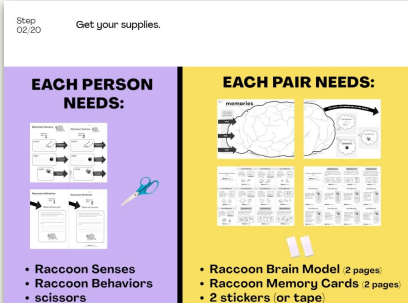
Step 02/20 Get your supplies.

EACH PERSON NEEDS:

- Raccoon Senses
- Raccoon Behaviors
- scissors

EACH PAIR NEEDS:

- Raccoon Brain Model (2 pages)
- Raccoon Memory Cards (2 pages)
- 2 stickers (or tape)



Step 06/20 After using your sense of touch to gather information about the Mystery Item, write what you notice in the "touch" box on your Raccoon Senses sheet.

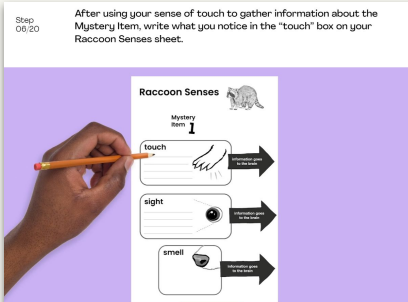
Raccoon Senses

Mystery Item 1

touch

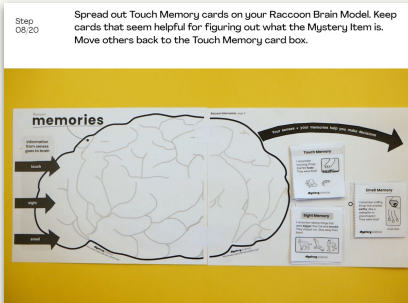
sight

smell



Step 08/20 Spread out Touch Memory cards on your Raccoon Brain Model. Keep cards that seem helpful for figuring out what the Mystery Item is. Move others back to the Touch Memory card box.

memories



Activity Notes

We suggest students work in pairs.

Divide the paper bags into two equal piles. We suggest labeling each bag in the first pile "1" and each bag in the second pile "2". These will correspond to "Mystery Item 1" and "Mystery Item 2" in the activity.

Place one cotton ball into each bag in the first pile. You'll distribute one of these bags to each pair of students in [Step 5] (#slide-id-17606) of the activity.

Place one small square of aluminum foil into each of the other bags. Try to avoid squeezing the foil into a ball because that will make it difficult for students to feel the texture. You'll distribute one of these bags to each pair of students in [Step 15] (#slide-id-17613) of the activity.

Ensure that each pair of students has enough space to lay out their Raccoon Brain models and the Memory Cards. Two student desks side-by-side should be sufficient.


Lesson 3: Why would a sea turtle eat a plastic bag?

Animal Instincts & Memories

Overview

In this lesson, students make observations of external and internal parts of trees in order to collect evidence that these structures work together as a system to help plants survive in a particular environment.

In the activity, Tree Detective, students use models of roots and branches to explore their functions and then construct an argument about how these structures must work together in order to support the survival of trees in the unique environment of the frozen taiga.



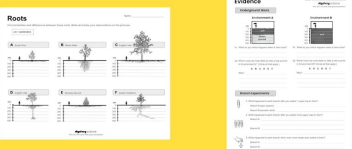
Exploration
10 mins

Hands-On Activity
40 mins

Wrap-Up
20 mins

Step 02/21 Get these supplies. (You'll get more supplies later.)

EACH PERSON NEEDS:




- Roots worksheet
- Evidence worksheet

Step 10/21

Partner 1: Hold both branch models over the side of your desk.
Partner 2: Put a heavy book on top of the ends to hold the branches in place. Make sure the branches are the same length.

Partner 2



Activity Notes

We suggest students work in pairs.

This activity involves pairs of students working together to create codes and then separating from one another to communicate those codes over a distance. Ideally student pairs will stand across the room from one another, but you may need to modify depending on your classroom.

You can choose to provide whatever materials you'd like for students to use for their codes. We suggest at least some paper and crayons. But you can include flashlights, musical instruments, or anything you'd like to encourage student creativity in their visual and sound code creation.