

INV. 4 ACTIVITY—STIMULUS AND RESPONSE

Set the Stage

Imagine that you touch something really hot with your finger. What would happen? You would instinctively pull your hand away from the heat without thinking about it. Our brains are capable of speedy reactions needed to protect us from danger.

The focus question: How do humans respond to danger in the environment?

Engage with online activity—"Response Timer"

Today you are going to go onto FOSSweb to engage with a multimedia called "Response Timer." You will drive a car and try to avoid hitting moose. Login to FOSSweb with your user name and password. Go to Online Activities and look for "Response Timer."

Click on the green "Start" button. When you are ready, click on the "Gas" button to start driving and then as soon as the moose appears, click on "Brake." If you are fast enough, the moose will clumsily run away. When you are done with this round, you will be shown your reaction time. Record:

Round one: Response to stimulus: _____

Moose Kills: _____

In round two you will need to make a decision. When you see the moose, you will hit the break. When you see a bull, you will hit the round red button that is the horn.

Round two: Make decision + Respond to Stimulus: _____

Moose kills: _____ Bull kills: _____

Play a few times and record your data in your science notebook. Can you improve your reaction time?

Is it harder to do one thing or to make a decision and then respond? What is your evidence to support this? Play a few times. Do you get better at the game? Record.

Go to your Media Library and look for Streaming Videos

View the video, *The Brain and Nervous System*, chapters 1-4.

Record a 3-2-1 in your notebook: list 3 things you learned about the brain and nervous system, 2 things you wonder about, and 1 fascinating thing. You may want to watch certain parts of the video multiple times.

Read the interactive e-Book on FOSSweb—FOSS Science Resources: *Living Systems*

Go to the Media Library. Click on the eBook and use the Table of Contents to go to "Stimulus and Response in Humans."

Before reading, study the picture of the brain. Look at the labels. As you read pages 58-59, you will see these words described. Read the whole article.

After reading describe in your notebook how your brain, motor neurons and sensory neurons work together to pull your hand away from danger. Answer the focus question.

INV. 4 ACTIVITY—ATTRACTING ATTENTION (PAGE 1 OF 2)

Think about a brightly colored plant or animal that lives in a natural environment. Jot the names of a few in your notebook.

Focus Question: What features of organisms attract attention?

Brightly colored flowers and fruits attract animals for pollination, seed dispersal, and other activities. The male peacock uses his stunning feathers to attract the attention of females. Today you will explore how to attract the attention of animals—your family members!



Investigation

1. Look at the **Attention Action Cards** on the next page. Fill out three to four “Attention Action Cards.” by selecting **two colors**, **one pattern**, and **one habitat** for each. You could write in an “other” option for habitat to match one that is in your neighborhood or yard. Your action cards should have different patterns and colors listed. **When finished, cut the cards apart.**
2. Design an organism that matches the descriptions on each action card—one organism for each action card. Things you can use to create these—a notecard or paper of the same size (about 4” by 6”), colored pencils, crayons, markers, scissors, or things from the recycling bin (cereal boxes or whatever), tape, etc.
3. Go outside and place your designed organisms in the appropriate habitat, held in place with tape or a rock. Remember, you are trying to attract the attention of a family member.
4. Head outside with a guardian or sibling to the location where you placed the organisms you designed. Give the family member Attention Action Card. Have them study one card to find out what they are attracted to. Then they should search for the organism with those patterns that catch their attention. You may need to tell your family member where the boundaries are, but don’t make it too small of an area. It could be in your front or back yard, in the strip between the sidewalk and the road, or in a local park. When they find one organisms give them another Attention Action Card. See how long it takes for them to find each organism.

Once your family member has found all of their organisms that match each action card, debrief the experience with them. Discuss the following questions:

- Which designs were the most effective attention getters?
What made the designs effective?
- In the real world, what are some aspects of various organisms that grab your attention?
- What plant or animals has features or behaviors (other than color and pattern) to attract or warn others?

Bees are attracted to brightly colored flowers. This is an example of attractive coloration. The colorful pattern of the coral snake are examples of warning coloration. Colors and other attention-catching features of organisms are adaptations. An adaptation is a structure, feature, or behavior that helps an organism survive and/or reproduce.

INV. 4 ACTIVITY—ATTRACTING ATTENTION (PAGE 2 OF 2)

Fill out the Attention Action Cards with different color, patterns and habitats. Cut them apart.

<p>Attention Action Card 1</p> <p>I am attracted to these two colors: _____ and _____</p> <p>I respond to this pattern (circle one):</p> <table><tr><td>Squares</td><td>Spots</td></tr><tr><td>Diamonds</td><td>Rectangles</td></tr><tr><td>Triangles</td><td>Stripes</td></tr></table> <p>I prefer this habitat: (circle one):</p> <table><tr><td>Grass</td><td>Bushes</td><td>Trees</td><td>Soil</td></tr><tr><td>Concrete</td><td>Bricks</td><td>Rocks</td><td>Bark mulch</td></tr></table> <p>Other _____</p>	Squares	Spots	Diamonds	Rectangles	Triangles	Stripes	Grass	Bushes	Trees	Soil	Concrete	Bricks	Rocks	Bark mulch
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<p>Attention Action Card 2</p> <p>I am attracted to these two colors: _____ and _____</p> <p>I respond to this pattern (circle one):</p> <table><tr><td>Squares</td><td>Spots</td></tr><tr><td>Diamonds</td><td>Rectangles</td></tr><tr><td>Triangles</td><td>Stripes</td></tr></table> <p>I prefer this habitat: (circle one):</p> <table><tr><td>Grass</td><td>Bushes</td><td>Trees</td><td>Soil</td></tr><tr><td>Concrete</td><td>Bricks</td><td>Rocks</td><td>Bark mulch</td></tr></table> <p>Other _____</p>	Squares	Spots	Diamonds	Rectangles	Triangles	Stripes	Grass	Bushes	Trees	Soil	Concrete	Bricks	Rocks	Bark mulch
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<p>Attention Action Card 3</p> <p>I am attracted to these two colors: _____ and _____</p> <p>I respond to this pattern (circle one):</p> <table><tr><td>Squares</td><td>Spots</td></tr><tr><td>Diamonds</td><td>Rectangles</td></tr><tr><td>Triangles</td><td>Stripes</td></tr></table> <p>I prefer this habitat: (circle one):</p> <table><tr><td>Grass</td><td>Bushes</td><td>Trees</td><td>Soil</td></tr><tr><td>Concrete</td><td>Bricks</td><td>Rocks</td><td>Bark mulch</td></tr></table> <p>Other _____</p>	Squares	Spots	Diamonds	Rectangles	Triangles	Stripes	Grass	Bushes	Trees	Soil	Concrete	Bricks	Rocks	Bark mulch
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<p>Attention Action Card 4</p> <p>I am attracted to these two colors: _____ and _____</p> <p>I respond to this pattern (circle one):</p> <table><tr><td>Squares</td><td>Spots</td></tr><tr><td>Diamonds</td><td>Rectangles</td></tr><tr><td>Triangles</td><td>Stripes</td></tr></table> <p>I prefer this habitat: (circle one):</p> <table><tr><td>Grass</td><td>Bushes</td><td>Trees</td><td>Soil</td></tr><tr><td>Concrete</td><td>Bricks</td><td>Rocks</td><td>Bark mulch</td></tr></table> <p>Other _____</p>	Squares	Spots	Diamonds	Rectangles	Triangles	Stripes	Grass	Bushes	Trees	Soil	Concrete	Bricks	Rocks	Bark mulch
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INV. 4 ACTIVITY—MARINE ECOSYSTEMS

We are coming to the end of our at-home learning of the Living Systems module. But before we end we want to study one more system—a marine ecosystem.

The focus question: *What are the parts of a marine ecosystem?*

View the Streaming Video, *Marine Ecosystems*

To access the streaming videos, login to FOSSweb, click on the Living Systems Module, and go to the **Media Library**. Click on the Streaming Videos, watch all the chapters of the video.

After you have watched all the chapters, select one of the following,

1. Chapter 5, *Shoreline Ecosystems*
2. Chapter 6, *Coral Reef Ecosystems*
3. Chapter 7, *Photic Twilight and Aphotic Zones in the Open Ocean*
4. Chapters 10 and 11, *Characteristics of Salt Marshes and Estuary Systems* and *Interview: A Marine Biologist Speaks about the Blue Crab*.

Watch the chapter you selected a second time, and then create a poster product that uses illustrations and words to demonstrate your understanding of the following:

- What animals live there? How do these animals interact?
- What are the characteristics of that ecosystem?
- What are the structures and functions of animals that live there and how are those animals adapted to the environment in which they live?
- What are some facts about that environment you learned about?
- The answer to the focus question should be answered on your poster.

Conduct more research on your environment. This will make for a stronger product.

You can tape two pieces of printer paper together, or use a large sheet of construction paper if you have it to make your poster.

Make sure your poster has your name on it and a title.

When you are done, share your poster with a family member. Ask them if they have any questions about the ecosystem you selected. If they do, and you want to add any information to your poster.

When you feel you have done the best you can, take a photo of your poster and send it to your teacher.