Grade 4: Module 2B: Unit 2: Lesson 1
Setting Purpose for a Deeper Study of Animal Defense Mechanisms

Long-Term Target Addressed (Based on NYSP12 ELA CCLS)	
I can accurately synthesize information from two texts on the same topic. (RI 4.9)	
Supporting Learning Target	**Ongoing Assessment**
• I can synthesize information from my notes into a paragraph.	• Synthesis paragraph

Agenda	Teaching Notes

1. Opening
 	
   A. Engaging the Reader: Revisiting the Performance Task Prompt (15 minutes)
 	
   B. Review Learning Target (5 minutes)
 	
2. Work Time
 	
   A. Guided Synthesis of Unit 1 Texts: Organizing Notes (15 minutes)
 	
   B. Guided Synthesis of Unit 1 Texts: Writing a Synthesis Paragraph (15 minutes)
 	
3. Closing and Assessment
 	
   A. Reveal of Expert Group Animals (5 minutes)
 	
   B. Review Homework (5 minutes)
 	
4. Homework
 	
   A. Begin reading your independent reading book for this unit.
	• This lesson serves as a bridge from Unit 1 to Unit 2, allowing students to reflect on and synthesize the content learned in Unit 1. They revisit the Performance Task and What Do Researchers Do? anchor charts to frame and give purpose to the lesson.
	
	• Because this is the first time synthesizing is formally taught in this module, a guided approach is used. During Work Time, the teacher models how to organize the research notes from the Animal Defenses research journal, using the Guiding Question Reflection graphic organizer. From here, he or she models how to take this information from the graphic organizer and organize it into a paragraph that answers the guiding question: "How do animals' bodies and behaviors help them survive?" After watching the teacher complete this process, students are given time to complete it themselves. Synthesizing is revisited later in the unit in Lesson 7.
	
	• The Guiding Question Reflection graphic organizer is familiar to students; a similar structure was used in Unit 1 when examining diagrams in informational text. This benefits students because it is a familiar structure, but they are learning to use it in a new context.
	
	• Students' exit tickets from Unit 1, Lesson 13 are returned, and they should be encouraged to use these in addition to their Animal Defenses research journal to write their paragraphs. Recall that the exit ticket asked them to answer the same question: "How do animals' bodies and behaviors help them survive?" You may wish to have students compare their responses on the exit ticket to their final paragraph written in this lesson as a way to demonstrate their growth after learning to synthesize information. Also note that the Guiding Question Reflection graphic organizer is in students' Animal Defenses research journal.
	
	• In the Closing of this lesson, students discover which animal they will research for the remainder of the module. Be sure to form the expert groups before the lesson, keeping in mind students' rankings on the Unit 1, Lesson 13 exit slip. It should be noted that the animals chosen for expert groups were selected intentionally for scaffolding purposes. The gazelle was chosen for students who generally need extra support in reading and research tasks; the mimic octopus and the armadillo will be appropriate for most students at this grade level; and the monarch butterfly will work well for students who need a challenge. These distinctions were made according to text complexity in *Animal Behavior: Animal Defenses* and *Venom*.

Agenda	Teaching Notes (continued)
	• In advance:
	– Assess Unit 1, Lesson 13 exit slips to be returned to students in Work Time A.
	– Create expert groups.
	• Post: Performance Task anchor chart, What Do Scientists Do? anchor chart, learning target.
	• Preview the Unit 2 Recommended Texts list and prepare books for students to browse and select at the close of this lesson. Students will use these books for independent reading and homework throughout this unit. Students should be given opportunities to read a variety of these texts related to the animal they will study throughout this unit. It is imperative that students have a volume of reading in order to build their knowledge and vocabulary. For more details, see the stand-alone document Foundational Reading and Language Skills: Grades 3-5 Resource Package. See in particular the document Independent Reading: The Importance of a Volume of Reading and Sample Plans.

Lesson Vocabulary	Materials
informational, synthesize	• Performance Task anchor chart (begun in Unit 1, Lesson 1)
	• Equity sticks
	• What Do Researchers Do? anchor chart (begun in Unit 1, Lesson 2)
	• Animal Defenses research journals (begun in Unit 1, Lesson 1; one per student; one to display)
	• Guiding Question Reflection graphic organizer (one per student and one to display)
	• Document camera
	• Exit tickets (from Unit 1, Lesson 13; one per student)
	• Guiding Question Reflection graphic organizer (answers, for teacher reference)
	• Listening Closely note-catchers (page 2 and page 4 of Animal Defenses research journal)
	• *Venom* (book; one to display)
	• Guiding Questions anchor chart (begun in Unit 1, Lesson 1)

Opening	Meeting Students' Needs

A. Engaging the Reader: Revisiting the Performance Task Prompt (15 minutes)
 • Congratulate students for wrapping up Unit 1. Tell them they now have a good foundation in what animal defense mechanisms are and how writers research topics they will write about.
 	
 • Draw students' attention to the **Performance Task anchor chart** and reread the prompt. Remind them that they are working toward writing a narrative during this module. Point out the added bullet points below the performance task prompt. Review each of the bullet points with students. Explain that students may not understand each of these requirements, but that each of these components of their performance task will be a focus of class learning as they work towards writing their choose-your-own-adventure narrative.
 	
 • Explain that before they can begin writing about the animal for their performance task, they will need to research to learn more about it.
 	
 • Point to the second bullet point of the prompt ("an informational page ...") on the anchor chart. Tell students they will work on this part of the performance task in this unit.
 	
 • Use **equity sticks** to call on a student to read the second bullet point of the prompt aloud:
 	
   * "An *informational* page with a physical description of your animal, its habitat, its defense mechanisms, and predators"
 	
 • Ask:
 	
   * "Based on the anchor chart, what kind of information will we be looking for during our research?"
 	
 • Listen for responses like, "We need to find information about what the animal looks like."
 	
 • Tell students they will work in expert groups to research animals. Remind them that they ranked their animal choices in Unit 1, Lesson 13. Tell them they will find out their expert groups and animals later in the lesson.
 	
 • Set the purpose for researching for the performance task by pointing out the **What Do Researchers Do? anchor chart**. Invite students to popcorn-read the bullet points on the chart.
	• The performance task provides motivation for student engagement in the topic and gives a purpose to the lesson.

Opening (continued)	Meeting Students' Needs

• Ask:
 	
   * "What things did we do on this list when researching general animal defense mechanisms and the defense mechanisms of the millipede in Unit 1?"
 	
• Listen for responses such as: "We researched the question 'How do animals' bodies and behaviors help them survive?'" or "We researched by reading different informational texts about animal defense mechanisms and gathered notes in our research journals" or "We participated in Science Talks."
 	
• Ask:
 	
   * "How did engaging in these activities help us learn more about animal defense mechanisms?"
 	
• Listen for responses like: "When we researched, we were able to learn about different examples of defense mechanisms animals use" or "Science Talks helped us to talk about what we learned with others and helped us understand things that might have been confusing to us."
 	
• Point out these bullet points:
 	
   * "Analyze data and facts, and draw a conclusion."
 	
   * "Think about how new ideas or learning connect to what they already know."
 	
• Explain that before they begin learning about a new animal, students will analyze their research notes in their **Animal Defenses research journal** to think about how their learning is connected and to *synthesize* the information they have learned to reflect on and answer the guiding question "How do animals' bodies and behaviors help them to survive?"	

B. Review Learning Target (5 minutes)
• Direct students' attention to the learning target. Invite them to silently read it to themselves:
 	
   * "I can synthesize information from my notes into a paragraph."
 	
• Ask if there are any words that they are unsure of or that confuse them. As students point out words, ask for clarification and annotate the learning target with clarifying words or synonyms. For example:
 	
   * "Synthesize: to combine information from several sources and make a general statement about the key learning"
 	
• Reread the learning target using the clarifying words and check for understanding with students.
	• Discussing and clarifying the language of learning targets helps build academic vocabulary.

Work Time	Meeting Students' Needs
A. Guided Synthesis of Unit 1 Texts: Organizing Notes (15 minutes)	• Graphic organizers engage students more actively and provide scaffolding that is especially critical for learners with lower levels of language proficiency and/or learning. You may want to provide a partially filled-in graphic organizer for students needing additional supports.
• Remind students that before they begin learning about a new animal, they will analyze their research notes in their Animal Defenses research journal to think about how their learning is connected and to synthesize the information they have learned. Post this guiding question for the module:	
* "How do animals' bodies and behaviors help them survive?"	
• Explain that a common mistake some people make when synthesizing is to summarize. When you summarize, you sum up the main points in one text, but when you synthesize, you combine information from more than one source to make a statement about key learning.	
• Tell students that before they can respond to the guiding question, they must first look through their notes to gather and organize information.	
• Distribute the **Guiding Question Reflection graphic organizer** and use a **document camera** to display a copy. Explain that they will use this graphic organizer to help them organize their notes.	
• Remind students that they reflected briefly on the guiding question, "How do animals' bodies and behaviors help them to survive?" in their **exit tickets** from Unit 1, Lesson 13 after their Science Talk. Return the exit tickets.	
• Tell students that they will use the answers they recorded on these exit tickets in addition to their Animal Defenses research journals to answer synthesize their learning about animal defense mechanisms and reflect on the guiding question.	
• Use equity sticks to call on a student to read the headings on the chart on the front of the Guiding Question Reflection graphic organizer.	
• Ask students what they notice about the headings. Listen for them to say that the headings are similar to those on the Examining Diagrams note-catchers from Unit 1. Ask:	
* "How will this graphic organizer help us to synthesize what we have learned about animal defense mechanisms?"	
• Listen for responses like: "We have to find details from two texts and use those details to make inferences about animal defense mechanisms."	

Work Time (continued)	Meeting Students' Needs
• Model filling in the graphic organizer using the example in the first row. Refer to the **Guiding Question Reflection graphic organizer (answers, for teacher reference)** as needed. The modeling may look like the following: – Model flipping through the Animal Defenses research journal to page 2, **Listening Closely note-catchers**. – Skim the note-catcher to see if there's a defense mechanism to use that answers the guiding question. Notice the note 'venom paralyzes or kills prey' and write that in the first column of the Guiding Question Reflection graphic organizer. – Model including the source by writing "*Venom* p. 8." – Model finding another detail about this defense mechanism by flipping in the Animal Defense research journal to page 4, Listening Closely note-catcher. Skim the note-catcher and point out the note that venom causes pain and makes the black widow's enemy sick. Model looking for the exact quote from the text by flipping to **Venom** pp. 10 and 11, as noted at the top of the note-catcher. – Skim the page for the detail: "Black widows, found all over the U.S., rarely kill humans, but they can make us quite sick, causing not only fever, nausea, and pain ..." and model writing it in the middle column of the Guiding Question Reflection graphic organizer, including the source. – Model making an inference about the defense mechanism based on these two details, writing the inference in the last column of the graphic organizer. • Invite students to use the Guiding Question Reflection graphic organizer to organize their research notes from Unit 1. Circulate and support as necessary, being sure that they are addressing how animals use both their bodies and behaviors to survive. • After 10 minutes, bring students back together whole group. Ask: * "Show a thumbs-up if you think you are ready to write your synthesis paragraph or a thumbs-down if you are not ready to write your synthesis paragraph." • Note any students who show a thumbs-down and check in with them during Work Time B.	• Some students may benefit from having access to "hint cards": small slips of paper or index cards that they turn over for hints about how/where to find information for each column of the graphic organizer. For example, a hint card might say, "Check the Determining the Main Idea note-catcher from Unit 1, Lesson 6."

Work Time (continued)	Meeting Students' Needs

B. Guided Synthesis of Unit 1 Texts: Writing a Synthesis Paragraph (15 minutes)
 	
• Explain that students will now use their notes on the Guiding Question Reflection graphic organizer to write a paragraph.
 	
• Invite them to turn and talk with a partner to discuss the guiding question:
 	
    * "How do animals' bodies and behaviors help them survive?"
 	
• Tell students to share with their partner one way an animal's body or behavior can help it to survive, and the inference they made. When the first partner has shared, invite the second partner to scan his or her notes for a detail that supports the first partner's inference. Then, complete the same process as the second partner shares.
 	
• Cold call a few pairs to share. If students need more support using their notes to support their inferring, model with something like the following:
 	
    – "I'll start off my paragraph by reflecting the guiding question. So my topic sentence will be, 'Animals' bodies and behaviors help them survive in many ways.' I want to be sure to use the words 'defense mechanisms,' since that's the scientific term for what I'm writing about.
 	
    – I'll add, 'These are known as the animal's defense mechanisms.'
 	
    – Now I'm ready to start sharing some of my inferences. So I'll write, 'One common defense mechanism is venom. Venom is one of the most effective defense mechanisms. Venom can paralyze or kill an animal's enemy or prey. For example, the venom of the black widow spider can make its enemy sick by causing a fever, nausea, or pain.'
 	
• Notice the steps I took in these sentences. I started by writing about my inference, and then I included the details from the texts I used in my research that support that inference. Having those details on my graphic organizer made it easy for me to find them."
 	
• Invite students to independently write their synthesis paragraphs. Remind them to use key words from the guiding question in their response.
 	
• Circulate and support as needed. Prompt students by asking:
 	
    * "What did you infer about animal defense mechanisms in Unit 1?"
 	
    * "What evidence in the texts we read supports your thinking?"
	• Some students may benefit from having paragraph frames as a scaffold for their synthesis paragraph.

Work Time (continued)	Meeting Students' Needs
• After about 10 minutes, bring students back together whole group. Cold call students to share one example from their paragraphs of how animals use their bodies and behaviors to survive. Record responses on the **Guiding Questions anchor chart**. • Collect students' Guiding Question Reflection graphic organizers as a formative assessment on what they understand so far about animal defense mechanisms, as well as their ability to synthesize information.	

Closing and Assessment	Meeting Students' Needs
A. Reveal of Expert Group Animals (5 minutes) • Tell students the moment they have been waiting for is here—they will now find out what animal they will research and write about for the performance task. • Share assigned animals and expert groups with students.	
B. Browse and Select Recommended Texts (5 minutes) • Allow students to browse the recommended texts for this unit. Encourage students to select texts related to the animal they will be studying. • As needed, reinforce routines for accountable independent reading as needed (see Teaching Notes).	

Homework	Meeting Students' Needs
• Begin reading your independent reading book for this unit.	

Grade 4: Module 2B: Unit 2: Lesson 1 Supporting Materials

Directions: Add the bullet points below under the performance task prompt.

Performance Task

After researching informational texts on animal defenses, create a choose-your-own adventure book about your chosen animal. Write an introduction that describes your animal's physical characteristics, habitat, predators, and defense mechanisms. In your narrative, describe an encounter with a predator and two possible defense mechanisms for survival. Use details and examples from your research to develop your narrative, including concrete words, phrases, and sensory details to convey your animal's experiences.

- An illustrated cover page with title

- An informational page with a physical description of your animal, its habitat, its defense mechanisms, and predators

- An "About Your Adventure" page explaining how to read the book and the possible challenges your animal could encounter (in question form)

- An introduction to your narrative, describing the challenge your animal encounters and two choices (defense mechanisms) it could make in order to survive

- A page for each choice (defense mechanism) describing the experience or events showing how your animal responds to the choice

- List of sources from your research

Guiding Question Reflection Graphic Organizer:
How do animals' bodies and behaviors help them survive?

Name:

Date:

Details from a text * How do their bodies help them survive? * What behaviors do they use to help them survive?	Details from another text about this defense mechanism	My inferences • What I infer or conclude about this defense mechanism
• One defense mechanism is …		
• One defense mechanism is …		
• One defense mechanism is …		
• One defense mechanism is …		

Guiding Question Reflection Graphic Organizer
How do animals' bodies and behaviors help them survive?

Explain how animals' bodies and behaviors help them survive. *(Remember to use key words from the guiding question in your response.)*

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Guiding Question Reflection Graphic Organizer:
How do animals' bodies and behaviors help them survive?
(Answers, for Teacher Reference)

Name:

Date:

Details from a text * How do their bodies help them survive? * What behaviors do they use to help them survive?	Details from another text about this defense mechanism	My inferences • What I infer or conclude about this defense mechanism
• One defense mechanism is … **"venom paralyzes or kills prey"** **Text: *Venom*, p. 8**	**"black widows, found all over the U.S., rarely kill humans, but they can make us quite sick, causing not only fever, nausea, and pain …"** **Text: *Venom*, p. 11**	**Venom is one of the most effective defense mechanisms.**
• One defense mechanism is … **"Many animals mimic other creatures to turn off predators."** **Text: *Award-Winning Survival Skills: How Animals Elude Predators***	**"The hoverfly gains protection from predators by looking like a bee."** **Text: *Animal Behavior: Animal Defenses*, p. 91**	**Some animals trick other animals by looking like more dangerous or poisonous animals. Enemies know to stay away.**
• One defense mechanism is … **"hard shells"** **Text: *Award-Winning Survival Skills: How Animals Elude Predators***	**"[Millipedes] have a tough exoskeleton."** **Text: *Venom*, p. 15**	**Shells protect some animals' bodies from predators.**
• One defense mechanism is … **"Bright colors can also be warning colors."** **Text: *Animal Behaviors: Animal Defenses*, p. 58**	**Spiders can be brown, black, red, or yellow (observations from photographs).** **Text: *Venom*, pp. 10 and 11**	**Predators see the bright colors and know to stay away from the animal because it is probably poisonous or venomous.**

Explain how animals' bodies and behaviors help them survive. *(Remember to use key words from the guiding question in your response.)*

Animals' bodies and behaviors help them survive in many ways. These are known as the animal's defense mechanisms. One common defense mechanism is venom. Venom is one of the most effective defense mechanisms. Venom can paralyze or kill an animal's enemy or prey. For example, the venom of the black widow spider can make its enemy sick by causing a fever, nausea, or pain. Another way animals protect themselves is by mimicking other animals to look more dangerous or poisonous. Predators know to stay away. For example, the hoverfly looks like a bumblebee. Predators think it's a bee and stay away because they do not want to be stung. Other animals protect themselves with a hard shell. The shell protects the animal's body from predators. Millipedes are one example of an animal with a hard shell. One last way animals' bodies help them survive is by having bright colors. The predators see the bright colors and know to stay away from the animal because it is probably poisonous or venomous. One example of an animal that uses warning colors is spiders. Some can be brown or black, but other more dangerous ones have red or yellow on them. Their enemies know to stay away! There are many ways animals use their bodies and behaviors to help them survive.