



**10** minutes

**5** minutes

**Note:** Introducing the Read-Aloud may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students

# Introducing the Read-Aloud

### What Have We Already Learned?

Ask students to name the largest group of animals on Earth. Remind them that the fly in the previous read-aloud introduced them to a variety of insects that live in nearly all parts of the world. Ask to name the one habitat in the world that does not have insects. (oceans) Also ask students to explain the difference between social and solitary insects. (Social insects live in groups, whereas solitary insects live alone or in pairs.)



### Show image 1A-16: Insect collage

Ask students to look at the collage of insects once more and name some ways in which these insects are different from one another. Then ask students to name several ways in which the insects are similar to one another. Tell them that today they are going to learn what all insects have in common.

# Making Predictions About the Read-Aloud10 minutes

Ask students to make predictions about what things all insects have in common, or what makes an insect an insect. Record students' predictions on chart paper, a chalkboard, or a whiteboard.

# **Vocabulary Preview**

#### Antennae

### Show image 2A-11: Cricket's thorax and front legs

- 1. In today's read-aloud, you will hear about parts of an insect's body called *antennae*.
- 2. Say the word *antennae* with me three times.
- 3. [Point to the cricket's antennae.] Antennae are feelers attached to the head of an insect that help it sense things.
- 4. Instead of a nose, a cricket uses its antennae to smell.

#### Show image 2A-9: Variety of insect antennae

 Can you find the antennae on these insects? [Ask for volunteers to point to the antennae.] What other things do you know have antennae? (possible responses include robots, cars, buildings, radios, horseshoe crab, lobster)

#### Exoskeleton

#### Show image 2A-18: Insect's exoskeleton and suit of armor

- 1. In today's read-aloud, you will hear about an insect's skeleton, called an *exoskeleton*.
- 2. Say the word *exoskeleton* with me three times.
- An exoskeleton is a skeleton on the outside of the body. It is the hard body covering of an insect that supports and protects it.
- 4. The raindrops rolled off of the insect's waterproof exoskeleton.
- 5. [Point to the suit of armor in the image.] This is called a suit of armor. How is an exoskeleton similar to a suit of armor? (It is on the outside of the body; it is hard; it protects what is under it.)

Why do you think insects have exoskeletons rather than skeletons on the inside of their bodies? (Answers may vary.)





**5** minutes

# **Purpose for Listening**

Tell students to listen carefully for the things all insects have in common, or what makes an insect an insect, and to see if their predictions are correct.

# Presenting the Read-Aloud





1 [Pause for students' responses.]



- 2 The word *microscopic* refers to things that are very, very small, like something that can only be seen well or at all with a microscope.
- 3 [Say the word *insect* followed by the word *section*.] What part of both these words sounds similar?



4 [Point to the body parts in the image as you read about them.]

### What Makes an Insect an Insect?

#### Show image 2A-1: Cockroach

Hello, boys and girls. The last time you gathered to learn about insects you were joined by a fly, an insect with whom you are surely familiar. I am also a very common insect that loves to live in bathtubs or underneath kitchen sinks. My cousins and I often hide during the day so you may not notice us. Does anyone know what type of insect I am? I am a cockroach. Do you think I look anything like a fly?

#### Show image 2A-2: Fly and cockroach

There are millions of insects on Earth. At first glance, we may look very different from one another. What are some of those differences?<sup>1</sup> What are some ways we are the same?

#### Show image 2A-3: Butterfly, grasshopper, lice, and fleas (clockwise)

Some insects, like butterflies and grasshoppers, have wings whereas others, like fleas and **microscopic** lice, don't.<sup>2</sup> Some eat plants and others eat animals, but all insects have certain features in common. I am here to talk about what makes an insect an insect.

Our name should give you a clue.<sup>3</sup> An insect's body is built in sections, or parts—three parts to be exact. We'll use one of my friends, the ant, as an example.

#### Show image 2A-4: Ant with three sections labeled $^4$

All insects have a head, a **thorax,** and an **abdomen.** The head is the center of an insect's senses, but different kinds of insects can have very different-looking heads. The thorax is the middle part of the insect's body. The abdomen is the end of the insect's body farthest away from the head.





5 What are the parts of your mouth called? (tongue, teeth, taste buds, lips)



6 [Point to the image as you read about the specific insect.]

7 [Show Image Card 1 (Butterfly).] Look closely. Can you see this Monarch butterfly's mouthparts working like a straw to suck nectar from this flower?

#### Show image 2A-5: Insect heads

What do you notice about the heads of these common insects? Do they look anything like yours? Do they have eyes? Yes, they do, but they are different from your eyes. For one thing, many insects have more than two eyes.

#### Show image 2A-6: Cricket's head

Most insects, like this cricket, have big eyes located on the side of the head. Many insects also have smaller, simple eyes on the tops of their heads. Look closely at this cricket's head. Can you see its eyes? Although some insects see better than others, most insects also use other senses to get information about their environments.

### Show image 2A-7: Bush cricket's head with focus on its mouth

Look at this bush cricket. Does it have a mouth? Yes, its mouth is a small hole at the front of its head, surrounded by mouthparts. You and the cricket both use your mouths to taste and eat. $^5$ 

### Show image 2A-8: Cockroach, aphids, mosquito, and bee (clockwise)<sup>6</sup>

Look at the variety of insect mouthparts. Some look like sponges; others look like scissors or needles. An insect's mouth is carefully designed for eating certain types of foods. Some insects bite and chew solid foods; others suck liquids; still others pierce their foods.

For example, cockroaches like me eat just about anything we can find. We have two pairs of jaws for biting, cutting, and chewing food well. Other insects, like the tiny aphids that destroy farmers' crops, have mouthparts that look more like drinking straws. They feed by sucking sap from plant leaves and stems through these tubes.

Look how long and sharp this mosquito's mouthpart is—perfect for piercing the skin of its prey and sucking its blood. Have you ever been bitten by a mosquito? They love to feed on people, as well as other animals like horses and birds. Butterflies and bees have long mouthparts for sucking nectar from flowers.<sup>7</sup>



8 What are the body parts humans use to sense things, or to learn more about our surroundings? (eyes, ears, nose, mouth, skin)



9 What is the middle section of an insect's body called?



10 Here the word *patch* means a piece of skin covering an opening. The word *patch* can also mean a small area of land where a particular plant grows, like a pumpkin patch.

#### Show image 2A-9: Variety of insect antennae

So, now you've seen insect eyes and mouths. What else do you see on the head of these insects? Ah, yes, those long feelers! Those are the insects' **antennae**, their most important sense organs. Insect antennae come in a variety of shapes and sizes and help insects learn more about their surroundings.<sup>8</sup>

#### Show image 2A-10: Cricket antennae

These jointed feelers, such as those on this cricket, are often covered with tiny bristles and pegs, and some are even quite feathery. Antennae are primarily used for smell and touch, although some can pick up sounds or detect movements in the air. Do you see a nose on this cricket? No, at least nothing that looks like your nose. Instead of a nose, the cricket uses its antennae to smell.

Eyes. Mouth. Antennae. What else might you expect to find on an insect's head? What other sensory organs do you have on the side of your head? Right—ears! Do you see any ears on this cricket? No. The cricket's ears are located on its legs, attached to the middle section of the cricket's body.<sup>9</sup>

The middle section of an insect's body is called the thorax. The thorax has three pairs of jointed legs and usually, but not always, two pairs of wings. Notice I said *pairs*. A pair is two of a specific item. If there are three pairs of legs, how many legs does an insect have altogether? Yes, all insects have six legs.

Let's take a look at the cricket's thorax and see if we can spot its ears.

#### Show image 2A-11: Cricket's thorax and front legs

Look just below its knee joint on the front leg. Do you see a smooth <u>patch</u> of skin?<sup>10</sup> That is the cricket's eardrum which is very important for it as it communicates with other crickets through sound. The cricket's eardrum bends in and out to catch the sound waves so it can communicate with other crickets.



11 [Pause for students to answer as you read the following questions.]



12 If caterpillars have three pairs of true legs, how many true legs do they have?



13 [You may wish to show the veins in your hand or the veins in a leaf.] Veins carry needed materials to different parts of the body.



#### Show image 2A-12: Grasshopper, bee, and backswimmer beetle

Insect legs vary according to an insect's lifestyle.<sup>11</sup> How do you think the long, muscular, back legs of a grasshopper might help it? That's right—its legs are designed for jumping to quickly escape danger. Have you ever seen the fuzzy legs of a honeybee covered with yellow clumps of pollen that it carries back to its hive? And how do you think the backswimmer beetle's pair of long legs help it in its water habitat? Notice the oar-like shape of the legs that it uses for paddling.

#### • Show image 2A-13: Caterpillar with focus on true legs and prolegs

Caterpillars have three pairs of true legs on the front part of their bodies, but their long bodies need extra support so they also have several pairs of stubby legs in back to help them cling to stems and leaves.<sup>12</sup> These false legs are called prolegs. Caterpillars loop along, grasping stems with their front legs, or true legs, before drawing their bodies up into a loop to hold on with their hind legs, or prolegs.

#### Show image 2A-14: Dragonfly wings

Only adult insects have wings, and some insects don't have any wings at all. If an insect does have wings, they are located on the insect's middle section, or thorax. Wings allow insects to move quickly from place to place, and they are surely one reason insects have survived in such large numbers for so many years. Insect wings may look very different from one another, but a network of veins supports each wing.<sup>13</sup>

#### Show image 2A-15: Cricket wing

When it's quiet at night, especially in the summer time, you may hear an interesting chirping noise coming from insects outside. That sound may be a cricket! Crickets' wings have veins. The veins of a male cricket's wings are thicker and shaped differently from many other insects. You'll learn more another day about how a cricket uses its wings to make its unique chirping sounds.



#### Show image 2A-16: Cricket's abdomen with spiracles

14 [Pause for students' responses.]







15 Why would the cockroach's hard exoskeleton help it to survive for so long?

So far, we've looked at an insect's head and its thorax. Every insect body is made up of three sections. What is the name of the third section?<sup>14</sup> The third and largest section is called the abdomen. Do you have an abdomen? Yes, you do. Your abdomen is your belly. Like an insect, your abdomen is where you digest your food, or break it down so your body can use it to grow and stay healthy. An insect's abdomen is also the part of its body where the female produces eggs. The abdomen is also where insects breathe. Like you, insects need oxygen from the air to live, but they do not have lungs, and they do not take in air through their noses or mouths.

Instead, if you look closely at this cricket's abdomen, you will see a line of tiny holes along its side. That is where insects take in air, containing oxygen, to breathe.

#### Show image 2A-17: Ant with three sections labeled

So, what makes an insect an insect? Well, it has three body parts—head, thorax, and abdomen. It also has six legs, and most insects have wings. But that's not all. All insects are invertebrates, meaning that they have no backbones. Instead of having skeletons inside their bodies like you, insects wear their skeletons on the outside.

### Show image 2A-18: Insect's exoskeleton and suit of armor

These waterproof **exoskeletons,** made of a tough, flexible material called chitin [ $\kappa$ Y-tin], protect the insect's soft insides like a suit of armor. Just like your backbone and bones, an insect's exoskeleton is the thing to which the insect's muscles attach.

#### Show image 2A-19: Cockroach

Here is a picture of another one of my cousins. We cockroaches were around long before the dinosaurs. I think our thick exoskeletons may have something to do with our long survival, don't you?<sup>15</sup>

Next time the narrator of the read-aloud will be an insect that holds its front legs together in a prayer position. What do you think that might be? She'll tell you how insects grow from tiny eggs into adults. Be prepared to be amazed!

# Discussing the Read-Aloud

**15** minutes

### Comprehension Questions 10 minutes

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding the students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

- Evaluative What do all insects have, or what makes an insect an insect? (All insects have three body parts: head, thorax, abdomen. They also have exoskeletons, or hard outer coverings.) [Refer students to the list the class made before listening to the read-aloud.] Were your predictions correct about what makes an insect an insect? (Answers may vary.)
- 2. Inferential In this read-aloud you heard about, and saw pictures of, many different insects. Based on what you heard and on the pictures you saw, what do you think the author was trying to explain in this read-aloud? (The author was trying to explain what makes an insect an insect and that, although there are many different types of insects, they all have the same body types.)
- 3. *Literal* On what part of the cricket's body are its ears located? (its front legs just below the knee joint)
- Show image 2A-8: Cockroach, aphids, mosquito, and bee (clockwise)
  - 4. Inferential Look at these insect mouth parts again. Which insects bite and chew their food? (cockroaches) How can you tell? (by the shape of its mouth; no long tube for sucking or sharp object for piercing) Which insect has a mouth shaped like a straw and is used to suck out sap from plant leaves



and stems? (aphid) Which insect has a long tongue that is used to suck nectar from flowers? (bee) Which insect has a sharp mouthpart that is used to pierce the skin of its prey? (mosquito)

5. Evaluative In what ways is an insect's skeleton different from yours? (It is on the outside of the body and is called the exoskeleton; it is hard like armor.) In what ways is it the same? (They serve the same purpose—protection and support; both are flexible; and both have muscles attached.)

#### • Show image 2A-13: Caterpillar with focus on true legs and prolegs

6. Inferential How many legs do insects have? (six) This caterpillar has many more legs than that. Is it an insect? Why or why not? (Yes; it has six true legs and the rest are prolegs, or false legs.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

- 9. *Evaluative Think Pair Share:* If you could choose any insect feature (antennae, special mouth parts, more legs, wings, etc.) to add to your own body, what would it be? Why? (Answers may vary.)
- 10. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]



## Word Work: Microscopic

- 1. In the read-aloud you heard, "Some insects, like butterflies and grasshoppers, have wings whereas others, like fleas and *microscopic* lice, don't."
- 2. Say the word *microscopic* with me.
- 3. If something is microscopic, it is very, very small, such as something so small you would need a special tool like a microscope to see it.
- 4. The germs that cause many diseases are microscopic, so they can't be seen with just your eyes.
- 5. What are some other things that are microscopic? [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "Something that is microscopic is . . ."]
- 6. What's the word we've been talking about?

Use an *Antonyms* activity for follow-up. Directions: The opposite, or antonym, of the word *microscopic* is the word *gigantic*. If *microscopic* means very, very small, what do you think *gigantic* means? *Gigantic* means very, very large. I am going to name some things. If what I name is very, very small, say, "That is microscopic." If what I name is very, very large, say, "That is gigantic."

- 1. a building that is forty stories tall (That is gigantic.)
- 2. an insect that we can't see crawling though the soil (That is microscopic.)
- 3. the Sun (That is gigantic.)
- 4. the Pacific Ocean (That is gigantic.)
- 5. a single grain of sand on the beach (That is microscopic.)

 $^{7}$  Complete Remainder of Lesson Later in the Day





**Note:** Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

# Extensions

**20** minutes

**5** minutes

# Solution Meaning Word Activity

Sentence in Context: Patch

**Note:** You may choose to have students hold up one or two fingers to indicate which image shows the meaning being described, or have a student walk up to the poster and point to the image being described.

### Show image 2A-11: Cricket's thorax and front legs

- 1. [Show Poster 1M (Patch).] In the read-aloud, you heard that a cricket has a smooth *patch* of skin on its front leg. Here *patch* means a piece of skin covering an opening. Which picture shows a similar meaning of *patch*?
- 2. The word *patch* can also mean a small area of land where plants grow, such as a pumpkin patch. Which picture shows this meaning of *patch*?
- 3. Now with your partner, make a sentence for each meaning of *patch*. Remember to be as descriptive as possible and use complete sentences. I will call on some of you to share your sentences. [Call on a few student pairs to share one or both of their sentences. Have them point to the part of the poster that relates to their use of *patch*.]



# Syntactic Awareness Activity

#### Adverbs

**Note:** The purpose of these syntactic activities is to help students understand the direct connection between grammatical structures and the meaning of text. These syntactic activities should be used in conjunction with the complex text presented in the read-alouds. There may be variations in the sentences created by your class. Allow for these variations, and restate students' sentences so that they are grammatical.

 We know that many verbs are action words. [Ask students to give examples of verbs or action words.] Today we will practice using adverbs. Adverbs are words that are used to describe verbs. Adverbs describe how an action is done.

### Show image 2A-9: Variety of insect antennae

- 2. What is this? (a grasshopper) What do grasshoppers do? (Grasshoppers sing.)
- Sing is an action word or verb. An adverb can be used to describe the verb sing. What words could we use to describe how grasshoppers sing? (*loudly, softly,* etc.) Grasshoppers sing loudly. Grasshoppers sing softly.
- 4. What are the adverbs that describe how a grasshopper sings? (loudly, softly)
- 5. In the read-aloud you heard that grasshoppers' wings move rapidly to make sounds.
- What do grasshoppers' wings do? (move) *Move* is an action word. An adverb can be used to describe the word *move*. What word is used to describe *how* the wings move in this sentence? (*rapidly*, which means quickly)
- 7. What is the adverb that is used to describe how grasshoppers' wings move? (rapidly)



- 8. I am going to ask some questions. Use the adverbs *loudly, softly, quickly,* or *slowly* to answer my questions.
- How does a turtle move? (A turtle moves *slowly*.)
- If a person whispers, how is he speaking? (He is speaking *softly.*)
- If a person shouts, how is he speaking? (He is speaking *loudly*.)
- If a person is trying to win a race, how does she run? (She runs *quickly*.)
- 9. What are the words that describe action words or verbs called? (adverbs)

# Vocabulary Instructional Activity: Sections (Instructional Master 2B-1) 10 minutes

#### Word Work: Sections

#### Show image 2A-4: Ant with three sections labeled

- 1. In the read-aloud you heard that every insect's body is built in three *sections*, or parts.
- 2. Say the word *sections* with me three times.
- 3. Sections are parts of something larger.
- 4. An insect's body has three sections: the head, the thorax, and the abdomen.

#### Which section is the largest? (abdomen)

Which section are the antennae attached to? (head) Which section is in the middle and has the legs attached to it? (thorax)

Use a *Cut and Paste* activity for follow-up. Directions: Distribute a copy of Instructional Master 2B-1 (Parts of an Insect) to each student. Have students complete the activity by first cutting out each section of an insect's body and the corresponding labels, and then gluing them in the correct arrangement on a separate piece of paper.









Am I an Insect? (Instructional Master 2B-2)15 minutes

#### Show image 2A-4: Ant with three sections labeled

• Have students identify the three body parts of all insects: head, thorax, and abdomen.

#### Show image 2A-5: Insect heads

• Have students identify parts of insect heads, including antennae (used for touch and smell) and mouthparts with specially developed uses.

#### • Show image 2A-11: Cricket's thorax and front legs

- Ask students to identify the part of the insect's body visible in this image where the legs and wings are attached. (thorax)
- Ask students to identify the part of the body not visible in this image that is responsible for digestion, egg production, and breathing. (abdomen)
- Show students Image Cards 2 (Cockroach), 3 (Dragonfly), 4 (Beetle), and 5 (Spider), and ask them to identify the four animals in the Image Cards.
- Ask students to compare and contrast the animals in the Image Cards, focusing on the parts of the different bodies. Ask students how the animal in Image Card 5 is different from the animals in the other images. (It has eight legs.) Ask them if a spider is an insect. (no) Ask how they can tell. (Insects have six, not eight, legs.)
- Distribute a copy of Instructional Master 2B-2 to each student. Have students cut out the images and sort them into two groups—insects and non-insects—based on the criteria they have learned. When finished, have students compare their sort with a partner and explain how they determined which animals belong in each group.

# Insects Journal (Instructional Master 2B-3) 20 minutes

- Have students think about the times they have interacted personally with insects. Ask them to think about what the insect looked like, where they saw the insect, and how the insect interacted with them. Have students draw a picture about their experience with an insect and write two or three sentences about their experience in their journal.
- Have students share their drawings and sentences with their partner or home-language peers. Encourage them to expand upon their vocabulary using richer and more complex language, including, if possible, any read-aloud vocabulary.
- Above and Beyond: Any students who are ready to do so may extend this activity by using trade books and other resources to gather more information about the insect they wrote about.