

## 3rd Grade: Life Cycles and Traits

## Teacher Guide and Answer Key

This ACT Aspire inspired assessment was developed to assess students understanding of the Arkansas Science Standards as well as prepare students to take the ACT Aspire in Science. Therefore, the format of the prompts and questions were developed to reflect that of the ACT Aspire assessment.

Due to the fact this is also an assessment of students content knowledge, students will need to use their background knowledge and content learned during the unit in addition to the passage, figures, and tables to answer some of the questions.

The following tables outlines the ACT Aspire Science assessment:

	Grade Level				Grade Level		
	3	4	5		3	4	5
<b>Total</b>	36	36	36	<b>DOK 1</b>	10–20%	10–20%	10–20%
<b>MC</b>	18–19 .50–.53	18–19 .50–.53	18–19 .50–.53	<b>DOK 2</b>	45–65%	45–65%	45–65%
<b>TE</b>	3–4 .08–.11	3–4 .08–.11	3–4 .08–.11	<b>DOK 3</b>	25–35%	25–35%	25–35%
<b>CR</b>	14 0.39	14 0.39	14 0.39				

Notes. EHS = Early High School (Grades 9 and 10); MC = Multiple-Choice; TE = Technology-Enhanced; CR = Constructed-Response. Paper-and-pencil tests do not have TE items. MC items are used in their place.

Below is a list of additional resources teachers can use in their classroom to prepare their students for the Science section of the ACT Aspire Assessment.

- ❑ [Readiness Standards](#) - ACT Aspire document reviews the strands of science where questions will be derived. Also provides an over of three domains of science on the assessment and strategies to prepare students.
- ❑ **Science Exemplars** with scoring explanations: [Grade 3](#) [Grade 4](#) [Grade 5](#)

**3rd-5th Grade Online Sample Items:** <http://actaspire.pearson.com/exemplars.html>

Use all the sandbox questions will all grade level students. One option is to display questions and then have students work in small groups to answer questions. Discuss the correct answer with students before submitting as the test will not provide any feedback or way to review student answers.

Subject	Username	Password
Science Grade 3	science3	actaspire
Science Grade 4	science4	actaspire
Science Grade 5	science5	actaspire

## Grow Grow Grasshopper

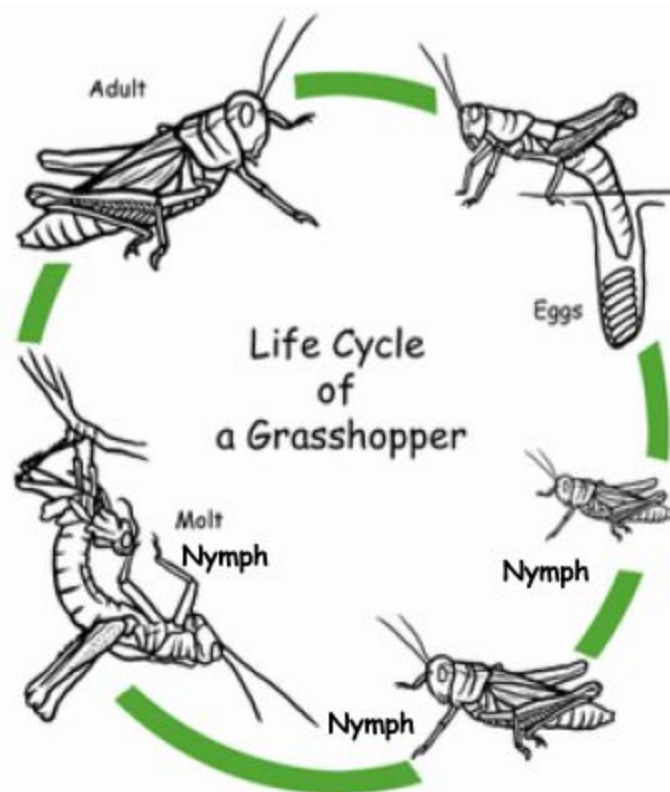
There are about a million kinds of insects, including butterflies, grasshoppers, bees, beetles, flies, and ants. All insects have six legs, no bones, and special mouthparts for eating different kinds of foods. Female insects lay eggs where they will be safe from other animals.

### Life Cycle of a Grasshopper

**Egg :** This is the beginning stage of a grasshopper's life cycle. The mother grasshopper lays *eggs* at the end of the summer under the sand or in leaves. The eggs wait for 10 months before hatching into *nymphs* during spring.

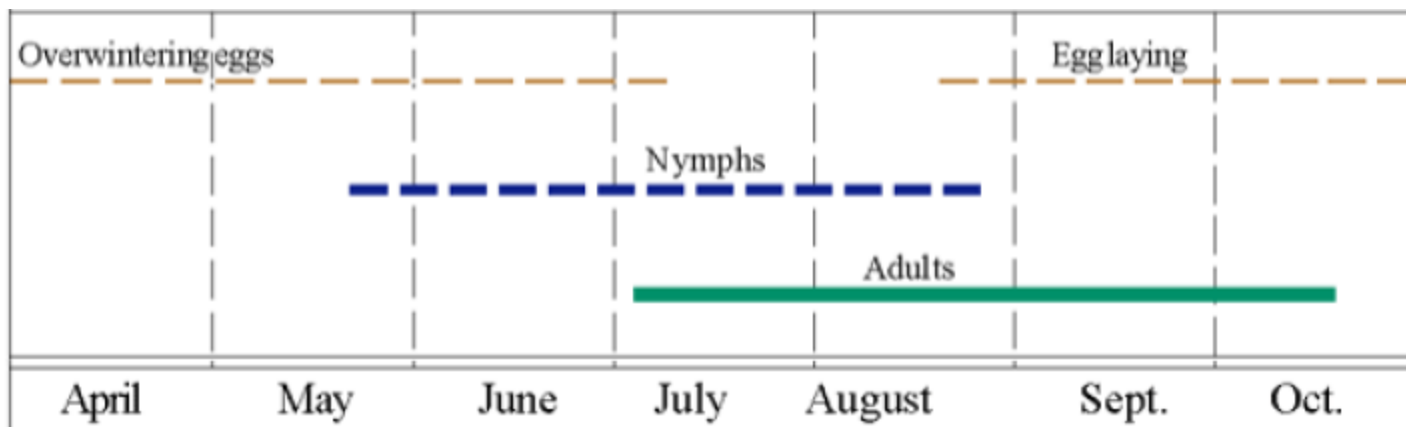
Figure 1

**Nymph:** When a grasshopper hatches out of its egg, it looks like a smaller version of its parents, but without wings. Its mouthpart enables it to bite and chew leaves. As the young grasshopper (called a nymph) continues to eat and grow, its body gets too big for its hard outer skin covering called an *exoskeleton*. When this happens, the nymph *molts*, or breaks out of its skin, and makes a new one. A nymph molts several times before it grows into a full-sized adult. During this molting stage, the young grasshopper develops wings.



**Adult:** The adult grasshopper is more mobile than the nymph, a characteristic that helps them to find food and flee from predators. Mother grasshoppers do not lay eggs until they are 1 or 2 weeks old. Adult grasshoppers live for about two months, depending on the weather. Table 1 shows the approximate months in which the stages of grasshoppers occur.

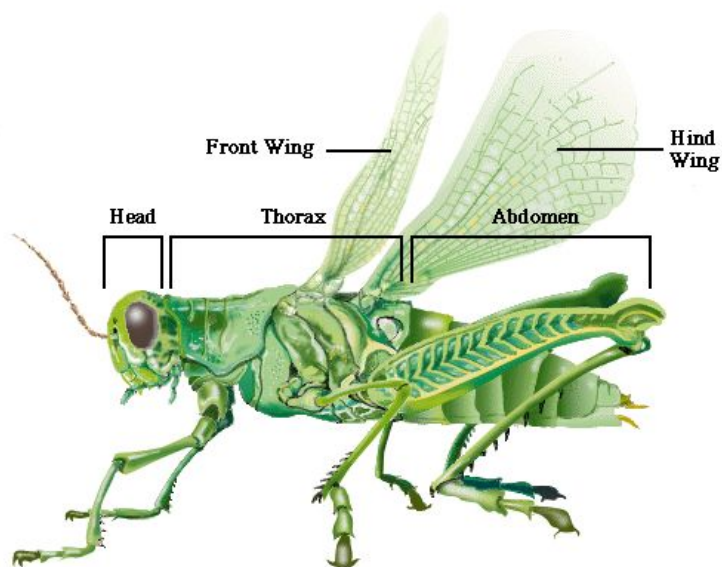
Table 1:



### Traits that help Grasshoppers Survive

Grasshoppers are unusual insects. They can walk, hop, and even fly. Grasshoppers have five eyes but no ears. They hear with special eardrums that are on the sides of

their bellies. Grasshoppers use their short front legs to eat and walk. They eat grasses weeds flowers and seeds, Their large back legs help grasshoppers hop and make sounds. A grasshopper calls to other grasshoppers by rubbing its back legs against its wings. Can grasshoppers really fly? They can! Their back legs boost them up, and their wings help them fly away from danger such as spiders, birds, and even mice.



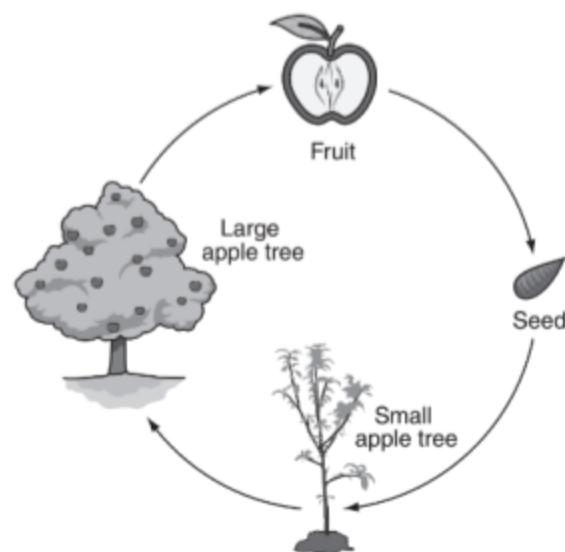
### Changes based on the Environment

Grasshoppers are one of the few animals able to change in response to the environment. If grasshoppers feel crowded, it triggers a special chemical that makes them grow larger, eat more, lay eggs faster and migrate in groups.

1. According to the passage, how long do adult grasshoppers live?
  - a. 3 ½ months
  - b. 10 months
  - c. 2 months**
  - d. 1 - 2 weeks
2. Use Table 1, in which months would you most likely find a grasshopper nymph.
  - a. April
  - b. June**
  - c. September
  - d. October
3. Using Figure 1, predict what will happen to the repeating life cycle pattern if the adult grasshoppers do not lay eggs.

Sample: There would be no eggs to hatch into new grasshoppers. There would be no more grasshoppers in that area.

4. Jim compares the models of the apple tree and grasshopper life cycle. What do both life cycle models show?
  - a. birth and death
  - b. growth and reproduction**
  - c. young organisms that look the same as the adults
  - d. organisms that do not change over time



5. What are some ways a grasshopper can change in response to their environment? Provide evidence from the passage to support your answer.

Sample:

A grasshopper can change. The passage stated that if grasshoppers feel crowded, it triggers a special chemical that makes them grow larger, eat more, lay eggs faster and migrate in groups. This is how a grasshopper can change.

6. Below you will find the life cycle of a butterfly and a grasshopper. Use these diagrams and information from the passage to compare and contrast the life cycle of grasshopper to the butterfly.

