
Insects, Spiders and Other Arthropods



Second-Grade Teacher Resource Guide

Table of Contents

Lesson summary	1
Vocabulary	1
Language Arts Crossword Puzzle.....	2-3
Language Arts Word Search.....	4-5
Extension Activities	6
Education Standards	7

Insects, Spiders and Other Arthropods: Lesson Summary and Vocabulary

Lesson Summary: The YSI *Insects, Spiders & Other Arthropods* program allows students to touch and examine samples of the arthropod phylum while learning about their characteristics and development. The presentation focuses on both instructor-led discussion and hands-on activities. Students will work as a group to assemble an insect and spider, observing the functions and variations in each body part. Discussion will continue as the instructor presents live examples, covering the arthropods' physical adaptations, diets, habitats, and roles both in nature and with humans. Students will learn about the insect life cycle and get a chance to touch and interact with mealworms in each stage of their metamorphosis. Throughout the program, students will be challenged to use their critical thinking skills to answer a wide range of open-ended questions and expand their understanding of insects and the arthropod phylum as a whole.

Vocabulary: Below are words and concepts that relate to the *Insects, Spiders & Other Arthropods* program.

Abdomen: the large third body part of an insect (and the second of a spider); contains organs

Antennae: the sensing organs of insects; used to listen, taste, feel, smell, and communicate

Arachnid: an arthropod with two body parts and eight legs; includes spiders and scorpions

Arthropod: an animal with an exoskeleton and jointed legs

Camouflage: something (such as color or shape) that protects an animal from attack by making the animal difficult to see in the area around it

Cephalothorax: the first body part of an arachnid; houses brain and attaches to limbs

Decomposer: an animal that feeds on dead matter and breaks it down into simpler compounds

Environment: the sum of everything that surrounds animals and humans in the natural world, including the air, the water, and the soil

Exoskeleton: the shell or external skeleton that supports and protects an arthropod's body

Habitat: the natural environment of a plant or animal

Insect: an arthropod with six legs and three body parts; more than half of the organisms on earth

Larva (Entomology): the wingless, feeding stage of an insect that undergoes complete metamorphosis

Metamorphosis: insect life cycle; development from larva to pupa to adult

Nymph (Entomology): the young of an insect that does not undergo complete metamorphosis, usually differs from the adult in that it is smaller and does not have wings

Pedipalps: extra frontal appendages or "arms" of a spider or other arachnid

Predator: an animal that hunts and eats other animals

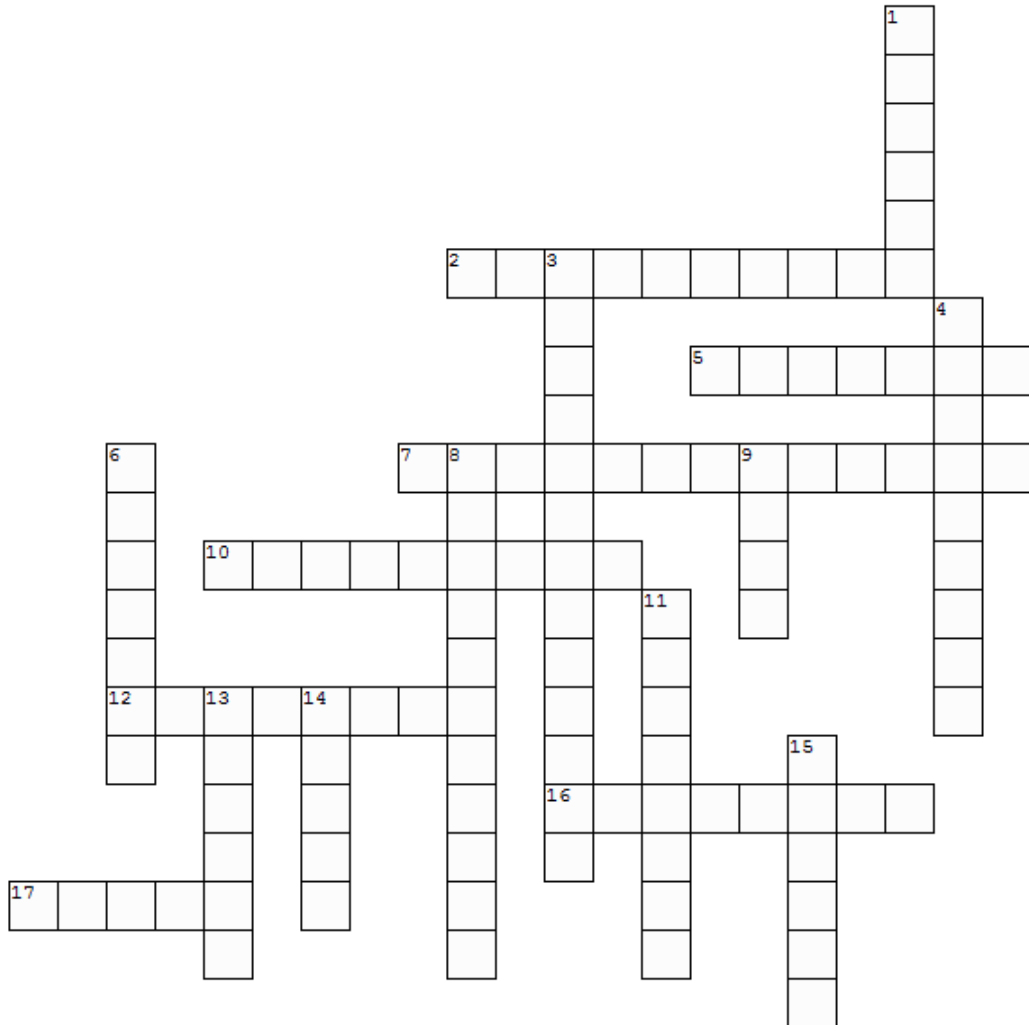
Pupa: an insect in the non-feeding, usually immobile, transformation stage between the larva and the adult

Spider: the most common type of arachnid; spins webs and has fangs

Thorax: the second or middle body part of an insect, attaches to limbs and sometimes wings

Language Arts Crossword Puzzle

Insects and Arthropods



- | | | | | | |
|------------|-------------|----------|-----------|---------------|---------------|
| ABDOMEN | ANTENNAE | ARACHNID | ARTHROPOD | CEPHALOTHORAX | |
| DECOMPOSER | EXOSKELETON | HABITAT | INSECT | LARVA | METAMORPHOSIS |
| NYMPH | PEDIPALPS | PREDATOR | PUPA | SPIDER | THORAX |

Across

2. An animal that feeds on dead matter and breaks it down into simpler compounds.
5. The large third body part of an insect (and the second of a spider); contains organs.
7. Insect life cycle; development from larva to pupa to adult.
10. An animal with an exoskeleton and jointed legs.
12. The sensing organs of insects; used to listen, taste, feel, smell, and communicate.
16. An arthropod with two body parts and eight legs.
17. The wingless, feeding stage of an insect that undergoes complete metamorphosis.

Down

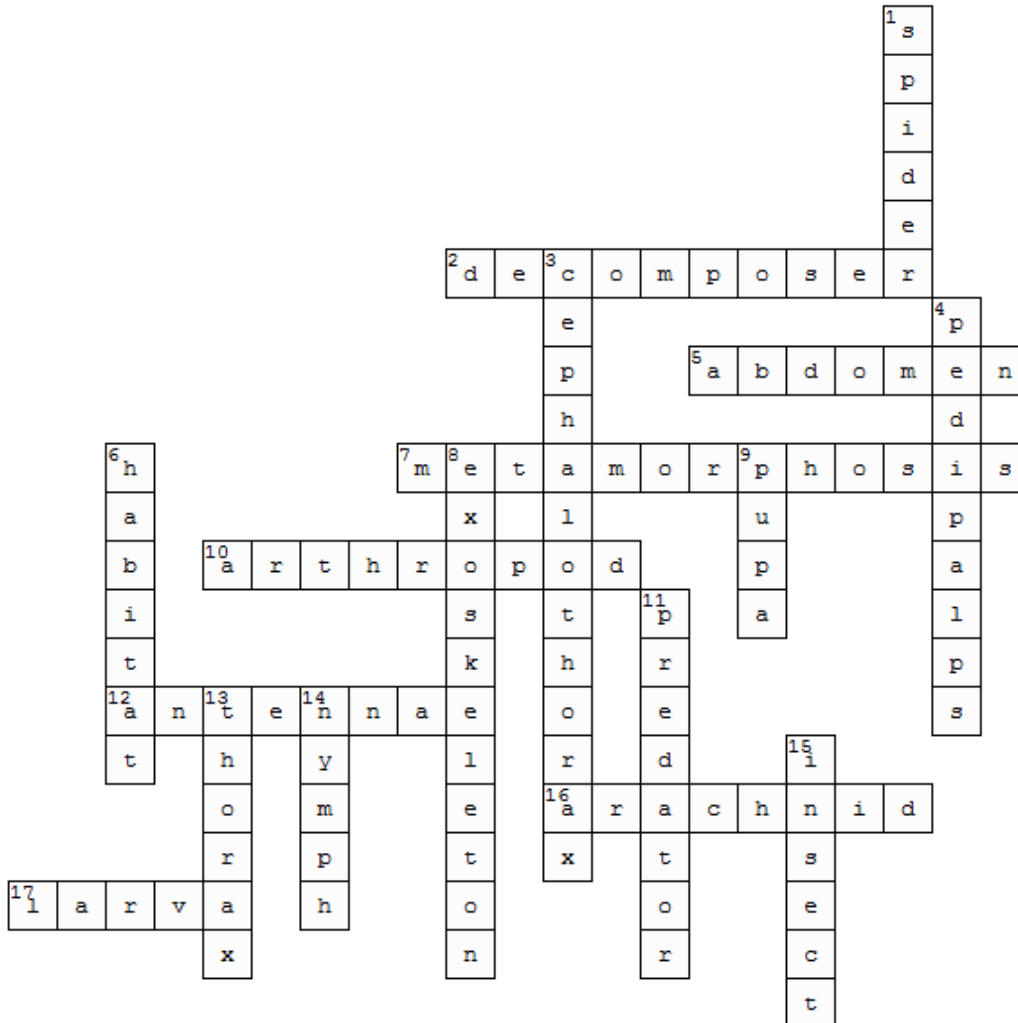
1. The most common type of arachnid; spins webs and has fangs.

3. The first body part of an arachnid; houses the brain and attaches to the limbs.
4. The extra frontal appendages or “arms” of a spider or other arachnid.
6. The natural environment of a plant or animal.
8. The shell or external skeleton that supports and protects an arthropod’s body.
9. An insect in the non-feeding, usually immobile, transformation stage between the larva and the adult.
11. An animal that preys on other animals to survive.
13. The second or middle body part of an insect, attaches to limbs and sometimes wings.
14. The young of an insect that does not undergo complete metamorphosis, usually differs from the adult in that it is smaller and does not have wings.
15. An arthropod with six legs and three body parts; more than half of the animals on earth.

Answer Key

Language Arts Crossword Puzzle

Insects and Arthropods



Across

2. An animal that feeds on dead matter and breaks it down into simpler compounds. (**decomposer**)
5. The large third body part of an insect (and the second of a spider); contains organs. (**abdomen**)
7. Insect life cycle; development from larva to pupa to adult. (**metamorphosis**)
10. An animal with an exoskeleton and jointed legs. (**arthropod**)
12. The sensing organs of insects; used to listen, taste, feel, smell, and communicate. (**antennae**)
16. An arthropod with two body parts and eight legs. (**arachnid**)
17. The wingless, feeding stage of an insect that undergoes complete metamorphosis. (**larva**)

Down

1. The most common type of arachnid; spins webs and has fangs. (**spider**)
3. The first body part of an arachnid; houses the brain and attaches to the limbs. (**cephalothorax**)
4. The extra frontal appendages or “arms” of a spider or other arachnid. (**pedipalps**)
6. The natural environment of a plant or animal. (**habitat**)
8. The shell or external skeleton that supports and protects an arthropod’s body. (**exoskeleton**)
9. An insect in the non-feeding, usually immobile, transformation stage between the larva and the adult. (**pupa**)
11. An animal that preys on other animals to survive. (**predator**)
13. The second or middle body part of an insect, attaches to limbs and sometimes wings. (**thorax**)
14. The young of an insect that does not undergo complete metamorphosis, usually differs from the adult in that it is smaller and does not have wings. (**nymph**)
15. An arthropod with six legs and three body parts; more than half of the animals on earth. (**insect**)

Language Arts Word Search

Insects and Arthropods

X A R O H T O L A H P E C A E B N
 T S I J K O H D C W K E S P G W F
 A U R M X H K F U O K X T W U J A
 F T D E C R P Q S W K O D R W P L
 P N L T D E K A K G U S F R U I A
 E Y C A Z D U B S G O K G E S P U
 D M I M K I S D H I Q E R S P F L
 I P C O E P V O T C M L D O L L Q
 P H D R Z S E M W Y Q E W P P T S
 A F O P V D P E N D R T P M R A B
 L X P H M E F N M G O O J O E T S
 P B O O T H O R A X M N C C D I U
 S F R S R T C C O P J A X E A B X
 Z N H I P Q L A R V A F N D T A M
 X K T S A N T E N N A E C M O H H
 J L R I F H T B D I N H C A R A F
 G B A X W C K T C E S N I G J W Q

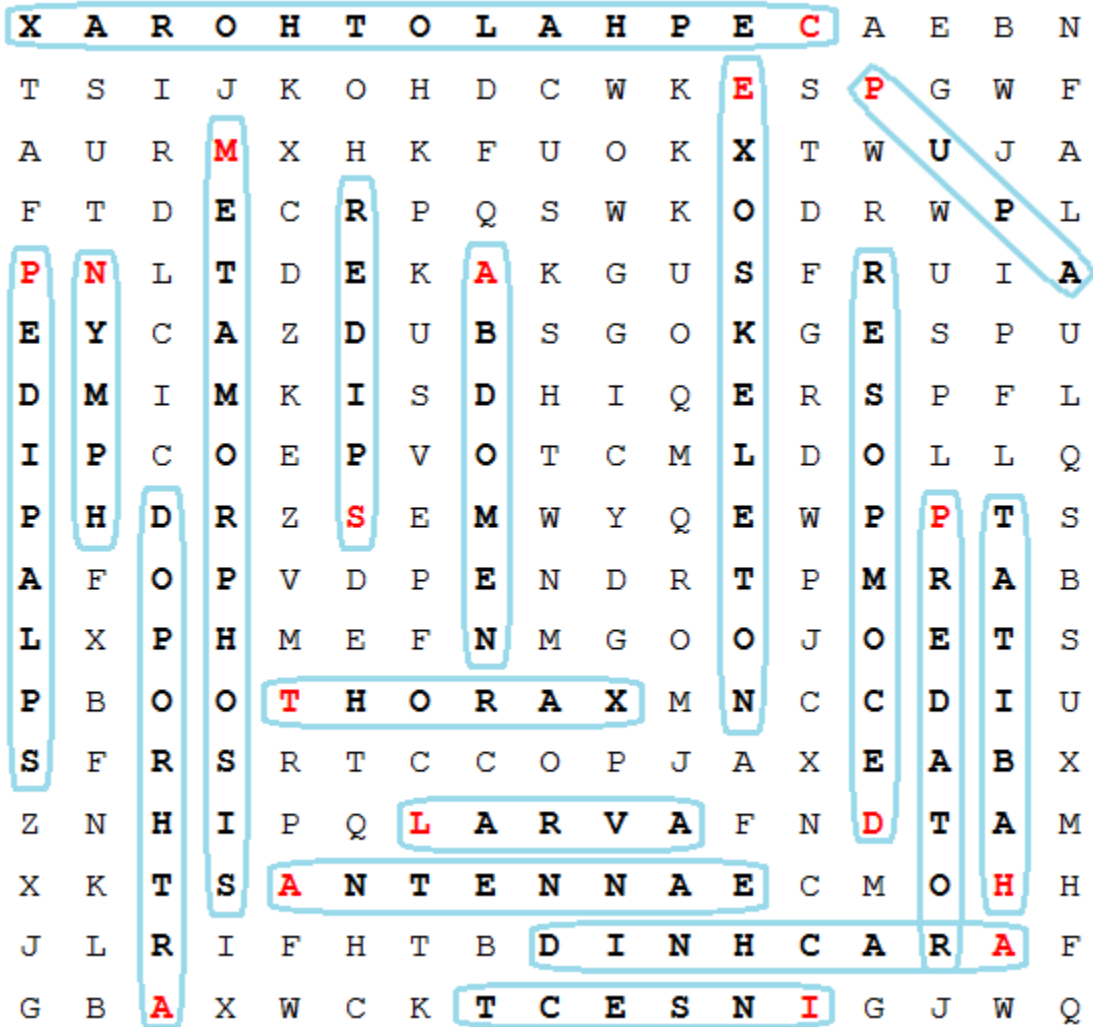
Word Bank

ABDOMEN
 ANTENNAE
 ARACHNID
 ARTHROPOD
 CEPHALOTHORAX
 DECOMPOSER

EXOSKELETON
 HABITAT
 INSECT
 LARVA
 METAMORPHOSIS
 NYMPH

PEDIPALPS
 PREDATOR
 PUPA
 SPIDER
 THORAX

Answer Key
Language Arts Word Search
Insects and Arthropods



Word Bank

- | | | |
|---------------|---------------|-----------|
| ABDOMEN | EXOSKELETON | PEDIPALPS |
| ANTENNAE | HABITAT | PREDATOR |
| ARACHNID | INSECT | PUPA |
| ARTHROPOD | LARVA | SPIDER |
| CEPHALOTHORAX | METAMORPHOSIS | THORAX |
| DECOMPOSER | NYMPH | |

Insects, Spiders and Other Arthropods: Extension Activities

The extension activities listed below are from RAFT (Resource Area For Teaching). RAFT educational content is available online (www.raftbayarea.org) at no cost and is aligned to California Science Standards and Next Generation Science Standards. Below is a selection of post-visit activities from RAFT to extend student learning about insects and arthropods.

[RAFT Idea: Bug Pooter – RAFT Bay Area](#)

Grades Covered: K through 10

Subjects Covered: Life Science

Curriculum topics: Arthropods; Observation; Classification; Insects

Description: A safe, humane way to collect and observe small creatures...

<http://www.raftbayarea.org/ideas/Bug%20Pooter.pdf>

[RAFT Idea: Camouflage – RAFT Bay Area](#)

Grades Covered: K through 12

Subjects Covered: Life Science

Curriculum topics: Natural Selection, Ecosystems, Probability, Design.

Description: Learn how coloration helps animals hide from predators...

<http://www.raftbayarea.org/ideas/Camouflage.pdf>

[RAFT Idea: Folded Flutterbys – RAFT Bay Area](#)

Grades Covered: K through 4

Subjects Covered: Life Science, Art

Curriculum topics: Art, Butterflies, Shapes

Description: Create a butterfly shape from two diagonally folded squares...

<http://www.raftbayarea.org/ideas/Folded%20Flutterbys.pdf>

Insects, Spiders and Other Arthropods: Education Standards

The following pages cite California Science Content Standards, Common Core Standards, and Next Generation Science Standards which students will be exposed to during the program.

California Science Content Standards Second Grade:

Life Sciences: 2. Plants and animals have predictable life cycles. As a basis for understanding this concept:

- a. *Students know* that organisms reproduce offspring of their own kind and that the offspring resemble their parents and one another.
- b. *Students know* the sequential stages of life cycles are different for different animals, such as butterflies, frogs, and mice.
- c. *Students know* many characteristics of an organism are inherited from the parents. Some characteristics are caused or influenced by the environment.
- d. *Students know* there is variation among individuals of one kind within a population.

Excerpted from CA State Standards: <http://www.cde.ca.gov/>

Common Core Second Grade:

Speaking and Listening Standards: Students will...

1. Participate in collaborative conversations with diverse partners about grade 2 topics with peers and adults in small and larger groups.
 - a. Follow agreed-upon rules for discussions.
 - b. Build on others' talk in conversations by linking their topics to the remarks of others.
 - c. Ask for clarification and further information as needed about the topics under discussion.
2. Recount or describe key information from information presented orally.
3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or clarify something that is not understood..

Excerpted from Common Core Standards: <http://www.corestandards.org/>

Next Generation Science Standards Second Grade:

Interdependent Relationships in Ecosystems

- **2-LS4-1:** Make observations of plants and animals to compare the diversity of life in different habitats.
 - **Science and Engineering Practices:**
 - **Planning and Carrying Out Investigations:** Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
-Make observations (firsthand or from media) to collect data which can be used to make comparisons. (2-LS4-1)
 - **Scientific Knowledge is Based on Empirical Evidence:** Scientists look for patterns and order when making observations about the world. (2-LS4-1)
 - **Disciplinary core ideas:**
 - **LS4.D: Biodiversity and Humans:** There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

Excerpted from NGSS: <http://www.nextgenscience.org/>