

Insects Close Up

Grade Level or Special Area: Second Grade

Written by: Janette Read, Normandy Elementary, Littleton, CO

Length of Unit: Six lessons, plus a culminating activity, completed in nine days (each lesson is approximately 45-50 minutes long)

I. ABSTRACT

In this unit the students are invited to explore the life cycles and characteristics of insects such as the honeybee, ant, and butterfly. This unit will blend the presentation of facts along with individual and group investigation to lead each student to a better understanding of the insect species.

II. OVERVIEW

A. Concept Objectives

1. Students understand how to write and speak for a variety of purposes and audiences. (Colorado Model Content Standard #2, Reading and Writing)
2. Students understand how to apply thinking skills to their reading, writing, speaking, listening, and viewing. (CMCS #4, Reading and Writing)
3. Students understand the process of scientific investigation and design, conduct, communicate about, and evaluate such investigations. (CMCS #1, Science)
4. Students understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. (CMCS #3, Science)

B. Content from the *Core Knowledge Sequence*

1. Second Grade Science: Insects (pp. 59-60)
 - a. Insects can be helpful and harmful to people.
 - i. Helpful: pollination; products like honey, beeswax, and silk; eat harmful insects
 - ii. Harmful: destroy crops, trees, wooden buildings, clothes; carry disease; bite or sting
 - b. Distinguishing characteristics
 - i. Exoskeleton; chitin
 - ii. Six legs and three body parts: head, thorax and abdomen
 - iii. Most but not all insects have wings.
 - c. Life cycles: metamorphosis
 - i. Some insects look like miniature adults when born from eggs, and they must grow (examples: grasshopper; cricket).
 - ii. Some insects go through distinct stages of egg, larva, pupa, adult (examples: butterflies, ants).
 - d. Social insects
 - i. Most insects live solitary lives, but some are social (such as ants, honeybees, termites, wasps).
 - ii. Ants: colonies
 - iii. Honeybees: workers, drones, queen
2. First Grade Science: Habitats (p. 37)
 - a. Living things live in environments to which they are particularly suited.
3. Kindergarten Science: Animals and Their Needs (p. 19)
 - a. Animals, like plants, need food, water, and space to live and grow.
 - b. Plants make their own food, but animals get food from eating plants or other living things.

- C. Skill Objectives
1. The student will indicate what has previously been learned about insects.
 2. The students will be able to describe new insects= facts.
 3. The students will become familiar with the shared characteristics of insects.
 4. The students will use scientific equipment to become familiar with the parts of an insects body.
 5. The students will learn what jobs the different parts of an insects body has.
 6. The students will become familiar with an ants' body parts.
 7. The students will be able to describe the life cycle of an ant.
 8. The students will explain what an ant colony is.
 9. The students will distinguish the different jobs ants have in a colony.
 10. The students will observe the life cycle of a butterfly.

III. BACKGROUND KNOWLEDGE

- A. For Teachers
1. Pike, K. *Insects*
 2. Claybourne, A. *Insects*
- B. For Students
1. In first grade students learned that living things live in environments to which they are particularly suited.
 2. In Kindergarten students learned that animals, like plants, need food, water, and space to live and grow.
 3. Students also learned that plants make their own food, but animals get food from eating plants or other living things.

IV. RESOURCES

- A. *Insects Are My Life* by Megan McDonald (Lesson One)
- B. *A Day with Bugs* video produced by Power to Create (Lesson Two)
- C. One "big screen" microscope or four regular microscopes (Lesson Three)
- D. Microscope slides showing different body parts of an insect along with the whole body (Lesson Three)
- E. *Ant Cities* by Arthur Dorros (Lesson Four)
- F. *Ants* by Deborah Hodge (Lesson Four)
- G. *The Honey Makers* by Gail Gibbons (Lesson Five)
- H. *Monarch Butterfly* by Gail Gibbons (Lesson Six)

V. LESSONS

Lesson One: What Do We Know? (approximately 50 minutes)

- A. Daily Objectives
1. Concept Objective(s)
 - a. Students understand how to write and speak for a variety of purposes and audiences.
 - b. Students understand how to apply thinking skills to their reading, writing, speaking, listening, and viewing.
 2. Lesson Content
 - a. First Grade Science: Habitats
 - i. Living things live in environments to which they are particularly suited.
 - b. Kindergarten Science: Animals and Their Needs
 - i. Animals, like plants, need food, water, and space to live and grow.

- ii. Plants make their own food, but animals get food from eating plants or other living things.
 - 3. Skill Objective(s)
 - a. The student will indicate what has previously been learned about insects.
 - b. The students will be able to describe new insect facts.
- B. *Materials*
- 1. Appendix A – one per student plus one overhead
 - 2. Pencils
 - 3. *Insects Are My Life* by Megan McDonald
 - 4. Chart paper
 - 5. Brightly colored markers
 - 6. Appendix D for teacher use
- C. *Key Vocabulary*
- None
- D. *Procedures/Activities*
- 1. See Appendix D for an explanation of the unit.
 - 2. Hand out Appendix A. Tell the students that today they are beginning a unit on Insects and you want to identify what they already know about insects.
 - 3. Ask the students to raise their hands and tell you things that they have already learned about insects. Record these items under the first column (what we know) on the overhead as the children record them at their desks.
 - 4. Once all the items that they already know have been written down, move on to the next column. Tell the children that now you want to know what they are interested in learning about insects. Ask them to raise their hands to tell you what they want to know. As you record it on the overhead, the students should be recording it on their paper at their desk.
 - 5. When everything has been recorded, collect Appendix A for use in the culminating lesson.
 - 6. Next, tell the children that you will be reading aloud a story. Tell them that it is their job to listen carefully for the insect facts in the story. Tell them there are a lot of facts, but they are well hidden and they have to be “fact detectives” to find the facts.
 - 7. Read aloud the story *Insects Are My Life* by Megan McDonald.
- E. *Assessment/Evaluation*
- 1. After reading aloud the story *Insects Are My Life*, ask the children to tell you the insect facts that they heard in the story. Record these responses on the chart paper with brightly colored markers. Some responses might be:
 - a. Bats eat insects.
 - b. Ants can crawl 40 miles.
 - c. An entomologist is a scientist that works with insects.
 - d. A wasp has compound eyes.
 - e. Spiders are not insects; they are arthropods.
 - f. Butterflies have taste buds on their feet.
 - g. Worms are not insects.
 - h. Whirligig beetles can see underwater.
 - 2. Display the chart paper when all the responses have been written.

Lesson Two: What are Insects? (approximately 50-60 minutes)

A. Daily Objectives

1. Concept Objective(s)
 - a. Students understand how to write and speak for a variety of purposes and audiences.
 - b. Students understand how to apply thinking skills to their reading, writing, speaking, listening, and viewing.
 - c. Students understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.
2. Lesson Content
 - a. Insects can be helpful and harmful to people.
 - i. Helpful: pollination; products like honey, beeswax, and silk; eat harmful insects
 - ii. Harmful: destroy crops, trees, wooden buildings, clothes; carry disease; bite or sting
 - b. Distinguishing characteristics
 - i. Exoskeleton; chitin
 - ii. Six legs and three body parts: head, thorax and abdomen
 - iii. Most but not all insects have wings.
 - c. Life cycles: metamorphosis
 - i. Some insects look like miniature adults when born from eggs, and they must grow (examples: grasshopper; cricket).
 - ii. Some insects go through distinct stages of egg, larva, pupa, adult (examples: butterflies, ants).
 - d. Social insects
 - i. Most insects live solitary lives, but some are social (such as ants, honeybees, termites, wasps).
 - ii. Ants: colonies
 - iii. Honeybees: workers, drones, queen
3. Skill Objective(s)
 - a. The students will become familiar with the shared characteristics of insects.

B. Materials

1. Insect folders (see note below)
2. Ten sheets of writing paper per student
3. Appendix B – one half sheet per student
4. Scissors – one pair per student
5. Glue sticks – one per student
6. *A Day with Bugs* video

C. Key Vocabulary

1. Antennae – feelers located between the eyes on some insects and used for smelling and feeling
2. Exoskeleton – a stiff shell that covers an insect's body and protects it
3. Thorax – the middle section of an insect's body
4. Abdomen – the bottom section of an insect's body
5. Colonies – a group of animals living or growing together
6. Metamorphosis – the change in form as an insect develops into an adult

D. *Procedures/Activities*

1. Before beginning this unit on insects, take a 30-minute time period to have your class assemble their Insect folders (or do it ahead of time for them). Each child will need a 3-prong folder, 10 sheets of writing paper, and a copy of Appendix B.
2. Hand out ten sheet of writing paper to each student. Tell the students to open their folders so that they can put the sheets of paper in the 3-prongs. Close the rings.
3. Tell each student to put his or her name on Appendix B and to cut around the rectangle of Appendix B. Using a glue stick, attach the rectangle to the front of their folder. (A glue stick will allow the rectangle to stick; yet, you will be able to pull off the rectangles at the end of the unit and reuse the folders.)
4. Pages one and two in the folders are reserved for vocabulary words. Using an overhead or board write the six vocabulary words from above down along with the definitions. Students should be copying them on page one of their Insect Folder.
5. Tell the students to sit aside their folders for now.
6. Tell the students that you are going to show a video that has a lot of facts about bugs and insects. Tell them that their job is to find out how bugs and insects are related. (Are bugs the same as insects and vice versa?)
7. Show the video *A Day with Bugs*.
8. Discuss the video with the class using the following discussion prompts:
 - a. Are all bugs insects? (No, insects belong to a larger group called arthropods. Some bugs such as spiders belong to another group called the arachnids)
 - b. What do all insects have to have? (six legs, three body parts, most insects have antennae)
 - c. How do insects breathe? (out of holes in the sides of their body)
 - d. What did you learn about ants? (they live in colonies, they can lift up to five times their own weight)
 - e. What did you learn about bees? (a bee farm is called an opiary, the queen lives in and lays her eggs in the brute chamber, worker bees collect food and take care of the young bees)

E. *Assessment/Evaluation*

1. Before showing the video, hand out Appendix C to each child. Tell the children that their job is to listen and learn during the video. Tell them that they need to listen and write down three facts about insects that they learned watching the video.
2. When I give an informal assessment such as this, I usually stop the movie a couple times to give the children time to write their facts down without missing part of the video. The video *A Day with Bugs* is approximately 30 minutes long, so I stop it about 10 minutes into the video and 20 minutes into the video. Each time I stop it for about four or five minutes.
3. Collect Appendix C. Allow time for the children to share the facts that they learned.

Lesson Three: Identifying Insects (two days, approximately 45-50 minutes each day)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand how to write and speak for a variety of purposes and audiences.

- b. Students understand how to apply thinking skills to their reading, writing, speaking, listening, and viewing.
 - c. Students understand the process of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
 - d. Students understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.
2. Lesson Content
- a. Distinguishing characteristics
 - i. Exoskeleton; chitin
 - ii. Six legs and three body parts: head, thorax, and abdomen
 - iii. Most but not all insects have wings
3. *Skill Objective(s)*
- a. The students will use scientific equipment to become familiar with the parts of an insects body.
 - b. The students will learn what jobs the different parts of an insects body has.
- B. *Materials*
- 1. One big screen microscope or one microscope per group of five students
 - 2. Slides of whole insects such as butterfly, honeybee, grasshopper
 - 3. Slides of body parts of insects (found at Lakeshore Learning)
 - 4. Appendix E – one per student and one overhead
 - 5. Insect Folders – one per student
- C. *Key Vocabulary*
- 1. Proboscis – a long flexible tube used by an insect to suck nectar
 - 2. Antennae – feelers located between the eyes on some insects and used for smelling and feeling (previously given in Lesson Two)
 - 3. Exoskeleton – a stiff shell that covers an insect’s body and protects it (previously given in Lesson Two)
 - 4. Thorax – the middle section of an insect’s body (previously given in Lesson Two)
 - 5. Abdomen – the bottom section of an insect’s body (previously given in Lesson Two)
- D. *Procedures/Activities*
- 1. Ideally, a big screen microscope will work best for this lesson so that all the students are looking at the same slide at the same time. A big screen microscope can be found at www.lakeshorelearning.com. If a big screen microscope cannot be used, regular microscopes can be used while putting the children into small groups. Also, most of the slides that are being used in this lesson can be purchased at Lakeshore Learning. They are called Insect Slides. The other slides showing an insect’s body can be made using blank slides.
 - 2. If microscopes are not available, you can use the internet. I have found a wonderful site that explains the different parts of an insect’s body with pictures. The site is <http://www.earthlife.net/insects/six.html>. This site is appropriate for children, but 2nd graders will obviously need guided direction on this site.
 - 3. Tell the children that today they will be observing insect parts and learn what each part of an insect is called along with the job it performs.
 - 4. First, go over the vocabulary words with the children. On the first page of their insect folders, they should be writing each vocabulary word along with the definition. When all the words have been added to their insect folders, have the children put their folders to the side.

5. Begin showing the slides of an insect's whole body. While showing these slides, you should be pointing out the different parts of an insect including: head, thorax, abdomen, antennae, proboscis, stinger (if appropriate), wings, eyes, and exoskeleton. Remember to give the job of each body part that is applicable.
 6. As you are showing and pointing out the different parts, remember to remind the children what each part of an insect does.
 7. Once all the slides have been shown, do a quick review with the children orally. Some appropriate questions might be:
 - a. What are the three parts of an insect's body called? (head, thorax, abdomen)
 - b. What are the antennae used for? (smelling and feeling)
 - c. What part of an insect's body would you find the antennae? (head)
 - d. What does an insect use to suck nectar and where is it located? (proboscis, on the head)
 - e. On what part of an insect's body would you find the wings? (thorax)
 - f. What is an exoskeleton and where is it found? (it is the skeleton of an insect and it is found on the outside of an insect's body)
 8. Hand out the children's Insect Folders. Tell the children to turn to the third page. Ask the children to divide page three in half with a horizontal line. Then have the students do the same thing on the back of page three.
 9. In the top left hand corner of each half, ask the children to write the following insects: Locust, Dragonfly, Honeybee, and Butterfly. This will be the end of day one.
 10. On day two, tell the students that they will be observing different body parts of each animal and they are to:
 - a. describe each part using just a few words
 - b. draw a quick sketch of each part
 11. I have found it to be extremely helpful to guide the children using one of the slides. Show them a good example of a description of a body part, along with a sketch of that part.
 12. Collect the Insect Folders to review.
- E. *Assessment/Evaluation*
1. Hand out Appendix E. Choose a student to read the directions aloud. Give the students approximately five to ten minutes to label the parts of an insect. Collect Appendix E.
 2. Once all papers have been collected, use the overhead of Appendix E and call on students to help you label an insect's body.

Lesson Four: The Ants Go Marching (one day, approximately 45-50 minutes)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand how to write and speak for a variety of purposes and audiences.
 - b. Students understand how to apply thinking skills to their reading, writing, speaking, listening, and viewing.
 - c. Students understand the process of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
 - d. Students understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.

2. Lesson Content
 - a. Distinguishing characteristics
 - i. Exoskeleton; chitin
 - ii. Six legs and three body parts: head, thorax, and abdomen
 - iii. Most but not all insects have wings
 - b. Life cycles: metamorphosis
 - i. Some insects look like miniature adults when born from eggs, and they must grow (examples: grasshopper, cricket)
 - ii. Some insects go through distinct stages of egg, larva, pupa, adult (examples: butterflies, ants)
 - c. Social insects
 - i. Most insects live solitary lives, but some are social (such as ants, honeybees, termites, wasps)
 - ii. Ants: colonies
 3. Skill Objective(s)
 - a. The students will become familiar with an ant's body parts.
 - b. The students will be able to describe the life cycle of an ant.
- B. *Materials*
1. *Ant Cities* by Arthur Dorros
 2. Ant Anatomy poster or page six in *Ants* by Deborah Hodge
 3. Pencils
 4. Insect Folders – one per student
 5. Appendix F – one per student
 6. Rulers – one per student
- C. *Key Vocabulary*
1. Colonies – a group of animals living or growing together (previously given in Lesson Two)
 2. Queen Ant – she lays eggs which will hatch into young ants
 3. Worker Ant – a female ant; workers do the day-to-day work in the colony
 4. Egg – the first stage in an ant, honeybee, or butterfly's life cycle
 5. Larva – the worm-like stage of an ant's life after it hatches from an egg
 6. Pupae (pupa) – the cocoon stage of an ant's life between larva and adult
 7. Social insects – insects that live and work together in colonies
- D. *Procedures/Activities*
1. Hand out the Insect Folders to each child. Using the board or overhead, write down vocabulary words two through seven from above along with the definitions. Student should be copying these into their folders (on the first two pages).
 2. Tell the students to put their Insect Folders to the side.
 3. Hang up the ant anatomy poster. (If you can't find an ant anatomy poster, page six and seven in *Ants* by Deborah Hodge illustrates an ant's anatomy fairly well.)
 4. Tell the children that by now they know a lot about an insect's body. Using the knowledge that they have learned, call on children to come up and point out the following items:
 - a. Name and point to the three parts of an ant's body. (head, thorax, abdomen)
 - b. What do ants use to touch, taste, and smell? (antennae)
 - c. Look at the poster and tell me what else all insects have in common. (six legs)
 5. Point to the ant's legs and tell the students that ants also have claws on the ends of their legs. This helps them to walk upside down.

6. Ask the students in which body part will you find the ant's mouth. (head) Tell the students that an ant has extremely strong jaws that are used for chewing, digging, carrying things, and fighting.
7. Tell the students that you now have a book you would like to share about ants and ant colonies.
8. Read aloud the story *Ant Cities* by Arthur Dorros. Tell the students to listen carefully because they will have an activity to complete about the story when you are finished reading it.
9. Engage the children in a short discussion about what they learned about ants in this book. If a student does not bring it up, be sure to discuss the life cycle of an ant. (the egg, larva, pupa, adult)
10. Hand out Appendix F. Call on a student to read the directions out loud. Do the first sentence together to show the children that they need to write the answer in the blank and cross out the word in the word box.
11. Collect Appendix F.

E. *Assessment/Evaluation*

1. Have the children turn to page four in their Insect Folders. Ask the children to get out their rulers. Tell the children to draw a vertical line down the center of the page and to draw a horizontal line across the middle of the page. This will divide page three into four sections.
2. Tell the children to label the top left box with a "1", label the top right box with a "2", label the bottom right box with a "3", and label the bottom left box with a "4".
3. Tell the children that we have discussed a life cycle of an ant and that you would like them to label the four stages of an ant's life. Then have the children draw a picture to match each stage and finally color that picture.
4. I allow the children to use the vocabulary section of their Insect Folders for help if they need it.
5. Collect their Insect Folders.

Lesson Five: Honeybees (two days, approximately 45-50 minutes)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand how to write and speak for a variety of purposes and audiences.
 - b. Students understand how to apply thinking skills to their reading, writing, speaking, listening, and viewing.
 - c. Students understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.
2. Lesson Content
 - a. Insects can be helpful and harmful to people.
 - i. Helpful: pollination; products like honey, beeswax, and silk; eat harmful insects
 - ii. Harmful: destroy crops, trees, wooden buildings, clothes; carry disease; bite or sting
 - b. Distinguishing characteristics
 - i. Exoskeleton; chitin
 - ii. Six legs and three body parts: head, thorax, and abdomen
 - iii. Most but not all insects have wings

- c. Life cycles: metamorphosis
 - i. Some insects look like miniature adults when born from eggs, and they molt to grow (examples: grasshopper, cricket)
 - ii. Some insects go through distinct stages of egg, larva, pupa, adult (examples: butterflies, ants)
 - d. Social insects
 - i. Most insects live solitary lives, but some are social (such as ants, honeybees, termites, and wasps).
 - ii. Honeybees: workers, drones, queen
 - 3. Skill Objective(s)
 - a. The students will explain what an ant colony is.
 - b. The students will distinguish the different jobs ants have in a colony.
- B. *Materials*
 - 1. Insect folders – one per student
 - 2. Pencils – one per student
 - 3. *The Honey Makers* by Gail Gibbons
 - 4. Scissors – one pair per student
 - 5. Scrap paper – three sheets per group
 - 6. Graph paper – one sheet per group
- C. *Key Vocabulary*
 - 1. Queen bee – the largest bee who makes sure the hive never runs out of bees
 - 2. Drone bee – male bees that mate with the queen
 - 3. Worker bee – females that do all the work in the beehive
- D. *Procedures/Activities*
 - 1. Hand out the Insect Folders. Using an overhead or blackboard, write the vocabulary words along with their definitions down. The students should be copying these on the first two pages of their Insect Folder.
 - 2. Tell the children to think back to what they have learned about insects so far. Ask them what the queen, drone, and worker bees are similar to. (ants)
 - 3. Tell the students to put their Insect Folders aside for now.
 - 4. Read aloud *The Honey Makers* by Gail Gibbons.
 - 5. Tell the student that they are going to make a honey bee life cycle.
 - 6. Hand out Appendix G. Tell the students to cut out Appendix G.
 - 7. Next have the student lay the circle on page five of their Insect Folders and trace it carefully onto the page.
 - 8. Next, tell the children to cut out the triangle shape (or window) on Appendix G. After they have cut out the triangle, tell the students to lay Appendix G back on the traced circle on page five of their Insect Folders. They should line up the circles perfectly and then carefully trace the triangle (or window) onto the circle on page five.
 - 9. Next, tell the students to line up their rulers with the horizontal and vertical lines of the triangle and extend them so that the circle is divided into fourths.
 - 10. Ask the students what the four stages of a honeybee’s life are. (egg, larva, pupa, adult) Starting in the top right triangle write the stages going clockwise around the circle.
 - 11. Tell the students that they need to answer the following questions for each stage in a complete sentence on page five. Write these questions on the board or overhead.
 - a. Egg – Who lays the eggs and who takes care of the eggs? (The queen lays the eggs and the worker bees take care of the eggs.)

- b. Larva – How soon will a larva hatch from each egg and what is the larva fed? (A larva will hatch from an egg within three days. The larva is fed beemilk and beebread.)
 - c. Pupa – What is pupa and how does the nurse (worker) bee help it? (A silky cocoon is spun around the larva where a pupa will develop. The nurse (worker) bee will seal up the cell with wax.)
 - d. Adult – How does the adult bee come into the world? (After the adult has formed in the cocoon, it will chew its way out of the cell).
12. After the students have written about the four stages, they can add a picture for each stage and color it.
 13. Once the writing and coloring are done, the students can lay the circle from Appendix G on top of page five of their folders and attach them using a brass fastener. They will then have a life cycle wheel of a honeybee.
 14. This is the end of Day One.

E. *Assessment/Evaluation*

1. The assessment should begin on Day Two.
2. Divide the students into four or five groups. Tell the students that they need to elect a female leader and a male leader in their group. Tell the students that the female and male chosen should be good leaders and responsible.
3. Give those leaders the tags for Queen bee and Drone (found on Appendix H). They should hang this on their chest.
4. The other students in the group are then the worker bees. Give them their tags to attach to their chests (found on Appendix H).
5. Next tell groups that they will have a few activities to do. Tell them that they are going to be a honeybee colony for the afternoon. That means that the worker bees will do all the work. The queen bees and the drones can look over their work but can't help or communicate with the worker bees at all. Each time a colony does an activity correctly, they will get a point. The colony with the most points at the end of the activities will win.
6. Tell the students that some of the activities will be timed, but they still need to do their best work –readable, correct spelling, etc.
7. Hand out three sheets of scrap paper and one sheet of graph paper (larger squares will work best) to each group.
8. The activities are as follows:
 - a. If a queen bee lays 1,341 eggs on Monday, 1,076 eggs on Tuesday, and 1,604 eggs on Wednesday how many larva will she have in a few days if they all survive? (4,021)
 - b. Draw and label the following parts on a butterfly's body – thorax, abdomen, head, antennae, legs, and wings. You will have three minutes to do this.
 - c. Try to recall five vocabulary words that we learned. Write them down along with their definition. You will have five minutes to do this.
 - d. Choose eight other words that go along with our unit on Insects, and make a word search with these words. Then hide those eight words by filling in the blank spaces on the word search. Be sure to list these eight words at the bottom of your word search. You will have eight minutes to do this.
 - e. Collect the word searches from the colonies that received a point for them. Redistribute them to different groups. Tell the groups that they will have four minutes to find the words in the word search.

Lesson Six: Butterflies (one day, approximately 45-50 minutes)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand how to write and speak for a variety of purposes and audiences.
 - b. Students understand how to apply thinking skills to their reading, writing, speaking, listening, and viewing.
 - c. Students understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.
2. Lesson Content
 - a. Distinguishing characteristics
 - i. Exoskeleton; chitin
 - ii. Six legs and three body parts: head, thorax, and abdomen
 - iii. Most but not all insects have wings
 - b. Life cycles: metamorphosis
 - i. Some insects look like miniature adults when born from eggs, and they molt to grow (examples: grasshopper, cricket)
 - ii. Some insects go through distinct stages of egg, larva, pupa, adult (examples: butterflies, ants)
3. Skill Objective(s)
 - a. The students will observe the life cycle of a butterfly.

B. *Materials*

1. *Monarch Butterfly* by Gail Gibbons
2. Pencils – one per student
3. Insect Folders
4. Crayons
5. Scissors
6. Five pieces of yarn for each student – any color
7. Hole punch

C. *Key Vocabulary*

1. Proboscis – a long flexible tube used by a butterfly to suck nectar (previously given in lesson three)
2. Migrate – go from one place to another

D. *Procedures/Activities*

1. Hand out the Insect Folders. Have the children turn to the vocabulary section. Write the word proboscis along with its definition on the board or overhead. The children should be copying this in their folders.
2. Next tell the children that you have a story to share called *Monarch Butterfly*.
3. Read aloud the story. You should be stopping throughout to check for understanding. You can use the following comprehension questions:
 - a. What is the life cycle of a butterfly? (egg, larva (caterpillar), pupa (chrysalis), butterfly)
 - b. When a butterfly breaks out of the chrysalis, what does it do next? (pumps fluid into its wings and waits for its wings to dry)
 - c. How do monarch butterflies protect themselves from other animals? (they have a bad taste and will make other animals sick)
 - d. When does a monarch fly? (during the day)
 - e. How does a monarch protect itself from the weather? (hiding under leaves)

- f. What do monarchs do in the wintertime? (migrate south to warmer weather)
- g. What are the important body parts of a butterfly? (head, thorax, abdomen, antennae, wings, proboscis, legs)
- 4. Tell the children that when a butterfly breaks out of the chrysalis its wings are folded together. The dye is pumped into their wings at this time and that is why a butterfly's right wing is exactly like the left wing.
- E. *Assessment/Evaluation*
 - 1. Tell the children that they are going to be making a butterfly mobile showing its life cycle.
 - 2. Hand out five index cards to each student. Tell the children to give their mobile a title. Ask the class for some ideas. (Ex. A Butterfly's Life Cycle, The Metamorphosis of a Butterfly, etc.) Tell the children to write their title on the first card along with their name.
 - 3. Tell the children that they now have four cards left. These will be for the four stages of a butterfly's life. Tell the children that you would like the stage to be written somewhere on the card along with a colored picture of that stage.
 - 4. Once all the cards have been completed, the children will need help putting together their mobile.
 - 5. Each child will need five pieces of yarn. You will need to punch holes at the top and bottom of every card except the last card. That card only needs a hole in the top.
 - 6. Show the children how to tie the string onto each card. Remind the children to make sure that their cards are in the correct order of a butterfly's life.
 - 7. Display the mobiles when completed.

VI. CULMINATING ACTIVITY

- A. Tell the students that they we have completed our unit on insects. Today they will be completing a unit test.
- B. Hand out Appendix I.
- C. Choose a student to read the directions out loud. Then choose different students to read each question. Be careful to give the students time to complete each question before moving on to the next.
- D. Collect Appendix I. You can use Appendix J to grade the unit tests.
- E. Hand out Appendix A (previously used in Lesson One).
- F. Tell the children that it is now time to fill in the last column on the KWL chart – what we have learned.
- G. Allow children to raise their hands and give ideas. You should record them on the overhead of Appendix A as the children record them on their own paper.

VII. HANDOUTS/WORKSHEETS

- A. Appendix A: Insects KWL
- B. Appendix B: Insect Folder Name Plate
- C. Appendix C: A Day with Bugs
- D. Appendix D: An Explanation of the Unit
- E. Appendix E: Insect Parts
- F. Appendix F: All About Ants
- G. Appendix G: A Honey Bees Life Cycle
- H. Appendix H: Queen, Worker, and Drone Tags
- I. Appendix I: Unit Test
- J. Appendix J: Key to Unit Test

VIII. BIBLIOGRAPHY

- A. Armstrong, B. *Insects*. Santa Barbara, CA: The Learning Works, Inc., 1990. 0-88160-192-6.
- B. Cernek, K. *Life Cycles*. Huntington Beach, CA: Creative Teaching Press, 2003. 1-59198-002-X.
- C. Claybourne, A. *Insects*. London: Aladdin Books, Ltd., 2000. 0-7613-1215-3.
- D. Dorros, A. *Ant Cities*. New York: Harper Collins, 1987. 0-06-445079-1.
- E. Gibbons, G. *The Honey Makers*. New York: William Morrow and Company, 1997. 0-688-11387-7.
- F. Gibbons, G. *Monarch Butterfly*. New York: Holiday House, Inc., 1989. 0-439-06195-4.
- G. Hodge, D. *Ants*. Tonawanda, NY: Kids Can Press, 2004. 1-55337-066-X.
- H. Lerner, C. *Butterflies in the Garden*. Hong Kong: Harper Children, 2002. 0-688-17479-5.
- I. McDonald, M. *Insects Are My Life*. New York: Scholastic, 1995. 0-439-31328-7.
- J. Pike, K. *Insects*. Australia: Blake Education, 2002. 1-4007-3184-4.
- K. Sussman, E. *Insects: Experiments, Games, Art, and Writing Activities*. Dana Point, CA: Edupress, 1998. 1-56472-115-9.
- L. Wexo, J.B. *Zoobooks: Insects 2*. San Diego, CA: Wildlife Education, Ltd., 1994. 0-937934-23-2.

NAME _____

Appendix A

INSECTS

What do we
Know?

What do we Want
to know?

What have we
Learned?

What do we Know?	What do we Want to know?	What have we Learned?

Appendix B

_____ 's
book about
Insects

_____ 's
book about
Insects

Appendix C



A Day with Bugs

Watch and listen carefully to today's video. Listen for three facts about insects and record them below. Use your best spelling. Each fact is worth five points.

Fact 1..... _____

Fact 2..... _____

Fact 3..... _____

TEACHER COMMENTS:

GRADE: _____ = _____
15



A Day with Bugs

Watch and listen carefully to today's video. Listen for three facts about insects and record them below. Use your best spelling. Each fact is worth five points.

Fact 1..... _____

Fact 2..... _____

Fact 3..... _____

TEACHER COMMENTS:

GRADE: _____ = _____
15

Appendix D

An Explanation of the Unit

Throughout this unit, there will be a couple of activities/investigations going on in the classroom that the children will be watching and discussing with you. These activities aren't written into the daily lesson plans of this unit; however, the students will still be observing and recording events for each activity. The children will often have questions or observations that they want to share on an ongoing basis, which makes for great class discussions.

ACTIVITY ONE

Our class sends away for butterfly larvae (caterpillars) that are fed and taken care of throughout this unit. It takes about two weeks for arriving caterpillars to go through their life cycle and become butterflies. Once the caterpillars become a pupa, they are hung in our butterfly net. The children are able to watch the life cycle of a butterfly up close and personal. There is a wonderful website that we have used to purchase our butterfly nets and larvae. It is www.insectlore.com. This is a very worthwhile experience for the children and successfully teaches the concept of metamorphosis.

Each child will have an Insect Folder that they are working in during this unit. Page seven in this folder is used to record the student's observations of the caterpillars/butterflies as they go through metamorphosis. We label this page "**Our Changing Butterflies**". Every other day we will write the date along with one or two short sentences describing how the caterpillars are changing. (Ex. April 28 – The caterpillars are very big. Two of them have formed a chrysalis already.) I usually ask the children to record their observations first thing in the morning when they come into the classroom and this gives us five or ten minutes for a short discussion and any questions.

ACTIVITY TWO

Our class has an ant farm and each year right before our insect unit, we send away for ants to fill this farm. This is a great experience for the kids and drives home the concepts about social insects. The children get to see the ants working together in colonies. There are a couple places that we have used to purchase our ant farms and ants. The first is at www.kidologytoys.com. Here you can purchase an ant farm for approximately \$19.95. The second place I would recommend checking is at www.unclemilton.com. Here you can find stores that sell Uncle Milton's Ant Farms. They run anywhere from \$20.00 to \$30.00 with shipping.

Each child will have an Insect Folder that they are working in during this unit. Page eight in this folder is used to record the student's observations of the ant farm. We label this page "**Ant Observations**". Every other day (opposite days of the butterfly observations) we will write the date along with one or two short sentences describing the ants and what we are noticing. (Ex. April 29 – The ants are working together and now have seven tunnels dug.) I usually ask the children to record their observations first thing in the morning when they come into the classroom and this gives us five or ten minutes for a short discussion and any questions.

Appendix E

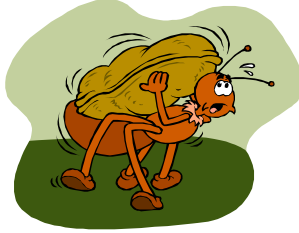
Insect Parts

Using the insect below, label the different parts of an insect's body. Use the word box to help you.

antennae	head	eye	abdomen
thorax	legs	wing	proboscis

Appendix F

All About Ants



Use the words in the word box to fill in the blanks.

colonies	worker	strong	larva
antennae	ants	adult	queen

There are over 10,000 different kinds of _____. Ants live in cities called _____. There has to be at least one _____ ant in each colony or there would be nobody to lay eggs. The ants that take care of the eggs are called _____ ants. Ants use their _____ to help them find food, to touch, and to smell. An ant is very _____ and can lift almost fifty times its own weight. An ant grows up in stages. The first stage of an ant's life is as an egg. A _____ hatches from the egg. A cocoon, or pupa, is spun in the third stage of an ant's life. The pupa finally turns into a(n) _____. It is now strong and ready to work.

Appendix G



A Honey Bees Life
Cycle

Appendix H

Queen Bee

Worker

Worker

Worker

Drone

Appendix I, page 1
Insect Unit Test

Draw a line from each vocabulary word to its definition. (8 points)

Proboscis	Feelers located between the eyes on some insects and used for smelling and feeling.
Egg	A stiff shell the covers an insect's body.
Colony	The change in form as an insect develops into an adult.
Exoskeleton	A long flexible tube used by a butterfly to suck nectar.
Antennae	A group of animals living and growing together.
Metamorphosis	The first stage in an ant, honeybee, or butterfly's life cycle.
Drone	Male bees that mate with the queen.
Queen	The largest bee or ant that lays the eggs.

Label the four stages in a butterfly's life cycle below each box. Then draw a picture of each stage. (8 points)

--	--	--	--

Use the word box to fill in the blanks. You will not use every word. (7 points)

head	six	caterpillar	worker	thorax
queen	ten	migrates	abdomen	ant

1. The three body parts that make up an insect are the _____,
_____, and _____.

Appendix I, page 2

2. An insect has _____ legs.
3. The larva of a butterfly is called a _____.
4. The _____ ants take care of the eggs and larva.
5. A monarch butterfly _____ south for the winter.

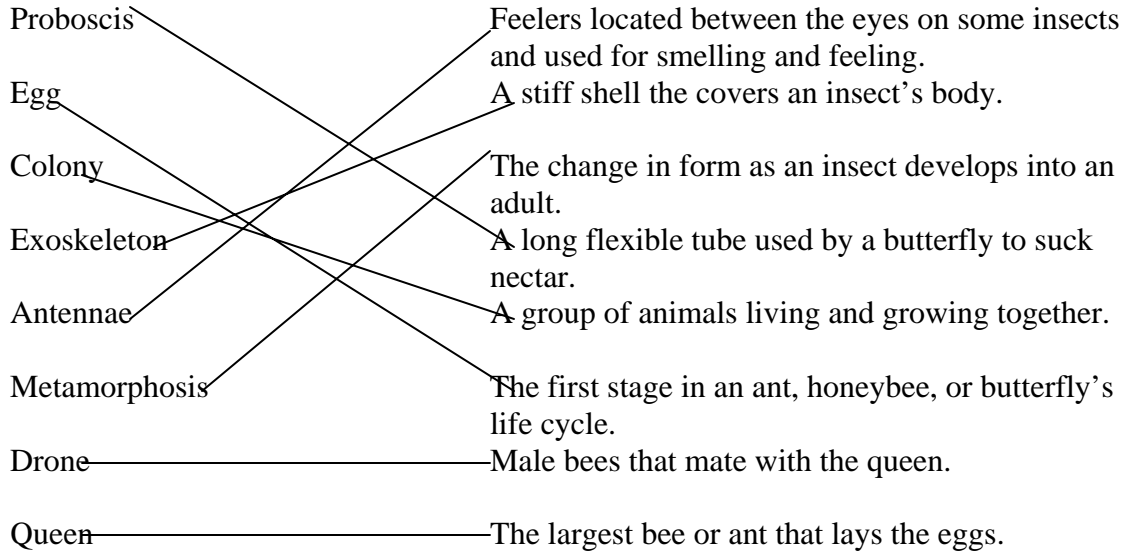
Using complete sentences, tell me the two things you learned in our Insect unit that were the most interesting to you. (2 points)

1. _____

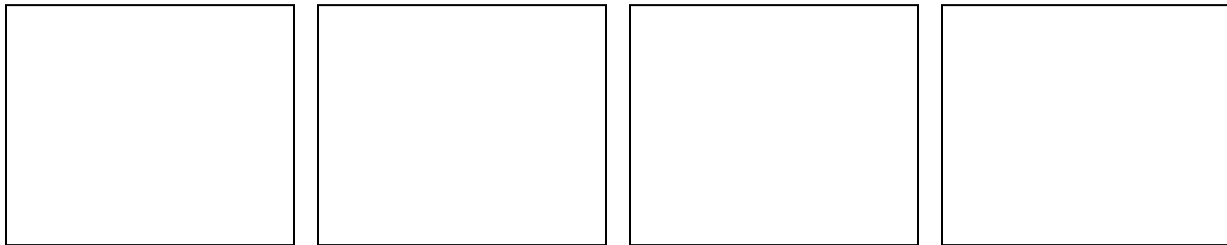
2. _____

Unit Test Key

Draw a line from each vocabulary word to its definition. (8 points)



Label the four stages in a butterfly's life cycle below each box. Then draw a picture of each stage. (8 points)



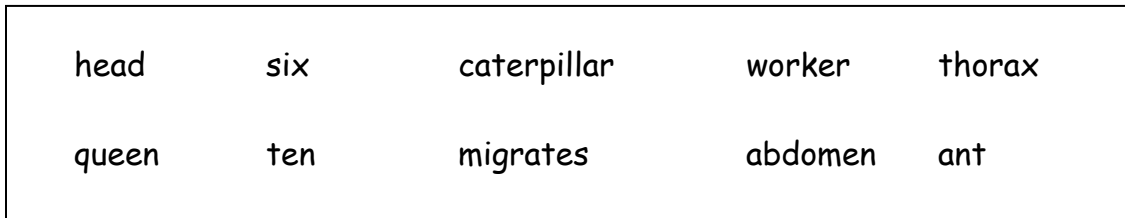
egg

caterpillar/larva

pupa/chrysalis

butterfly

Use the word box to fill in the blanks. You will not use every word. (7 points)



1. The three body parts that make up an insect are the head, thorax, and abdomen.

Appendix J, page 2

2. An insect has Six legs.
3. The larva of a butterfly is called a caterpillar.
4. The worker ants take care of the eggs and larva.
5. A monarch butterfly migrates south for the winter.

Using complete sentences, tell me the two things you learned in our Insect unit that were the most interesting to you. (2 points)

1. ANSWERS WILL VARY

2. _____