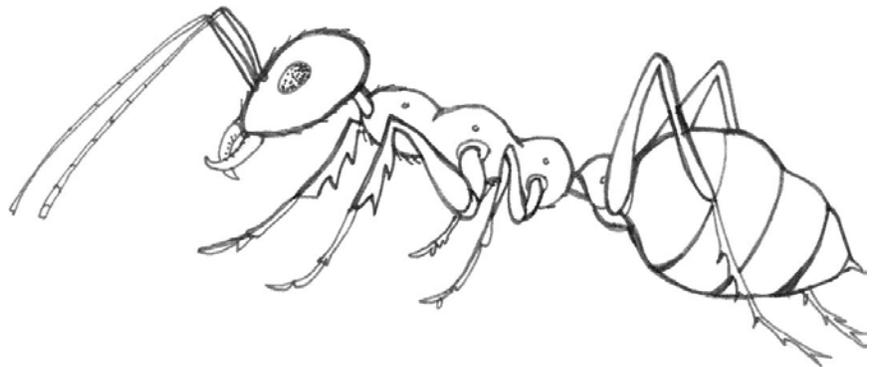
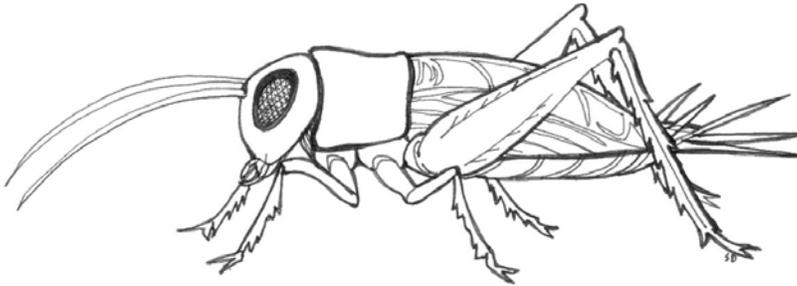


**ELEMENTARY SCIENCE PROGRAM**  
**MATH, SCIENCE & TECHNOLOGY EDUCATION**

**A Collection of Learning Experiences**

# **INSECTS**



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# INSECTS

## GRADE K

### Unit Overview

Insects introduces students to the cricket and the ant. Students create habitats for these insects in their classroom. Students then investigate the cricket's and ant's home, food, preferences, body structure, and life cycle. Students identify the body parts necessary for an animal to be an insect and classify animals based on their characteristics. The skills of observing, discussing, describing, predicting, comparing, and classifying are used throughout the unit.

### Scheduling

This unit may take from ten to twelve weeks to complete depending upon the goals of the teacher and interests of the students. Use of the section included in this manual called More Ideas may extend the time span of this kit.

#### Materials to be

obtained locally: Please make **one** student activity book for **each** student.

chart paper	felt tip markers	index cards
baskets/containers	crayons/colored pencils	food toys/paper food
metric ruler	raisins	water
bread	peanut butter	dog food pellets
tape	book binding material (yarn, tape, stapler)	

### Caution

Remind students to wash their hands after handling any of the materials in the kit. Small objects should be handled with care.

### About the Format

Each learning experience is numbered and titled. Under each title is the objective for the learning experience.

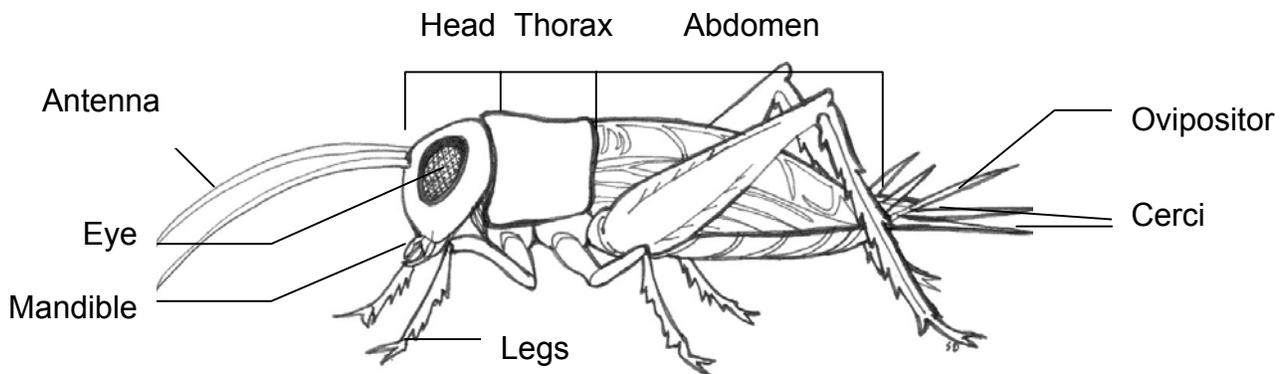
Each learning experience page has two columns. The column on the left side of the page lists materials, preparations, basic skill processes, evaluation strategy, and vocabulary. The evaluation strategy is for the teacher to use when judging the student's understanding of the learning experience.

The right column begins with a "Focus Question" which is typed in italicized print. The purpose of the "Focus Question" is to guide the teacher's instruction toward the main idea of the learning experience. The "Focus Question" is not to be answered by the students. The learning experience includes direction for students, illustrations, and discussion questions. These discussion questions can be used as a basis for class interaction.

# Background Information

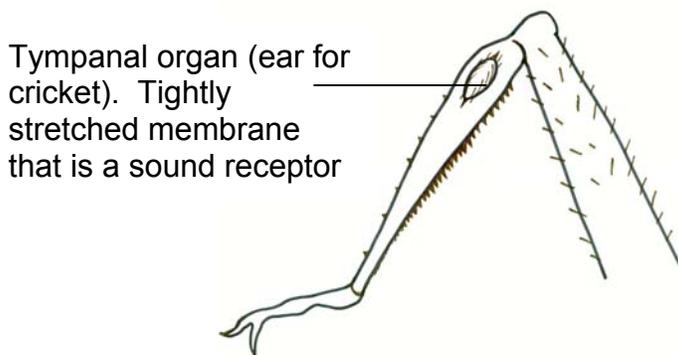
## Crickets

Crickets are insects. Like other insects, crickets have six legs and their bodies are divided into three main sections. These sections are the head, thorax, and abdomen. The head includes the brain, mouth, antennae, and eyes. The legs and wings are attached to the thorax section. In the abdomen, food digestion, breathing, and mating takes place. Crickets have two projections half the length of their body which project rearward from their abdomen. These projections are called **cerci**. The cerci are used to detect vibrations. The female has a third, longer projection called the **ovipositor** between the cerci. After mating, the female pushes the ovipositor into the sand or soil and lays a single egg at a time.



## Legs

Crickets have jointed feet and a back pair of legs with large muscles that allow the insect to jump. A cricket can jump twenty times its body length. The front legs of the cricket are also its ears. The tympanal organs are located near the “elbow” of the forelegs. Crickets hear by allowing the sound waves to vibrate a membrane stretched like a drum. Once the vibrating takes place, nerves transport the signals to the brain. These ears are important during mating season, late spring to early fall. The female faces the direction from which a male is chirping to pinpoint the location of her mate.



## Chirping

Crickets use their chirping sound as their mating call. Only male crickets can chirp. The female, whose wings do not have the special veins needed to make the wings stronger, do not chirp. On the upper wings of the male, there is a vein that has over a hundred

ridges on it. This wing is called the **file**. A small ridge on the edge of the wing is called the **scraper**. When the wings pass each other, the scraper of one wing will pass the file on the other. This results in the chirping sound of the cricket. The faster the wings pass over each other, the higher the pitch of the chirp. The rest of the wings act as an amplifier to the sound. This amplification helps the female identify the male during the mating season.

**Mouthparts**

Crickets will try a wide variety of foods such as various leaves and flowers. The cricket’s mandibles, their biting jaws, help in shredding food. The food then gets passed into the mouth using another pair of jaws. This organ is called the **maxillae**. And a small jointed feature called the **palpi** helps the cricket taste its food.

**Predators**

Crickets are food for other animals. Spiders, some wasps, ground beetles, birds, small rodents, and lizards are all predators of the cricket. Many who have rodents or lizards as household pets purchase crickets as the food for their animal.

**Life Cycle**

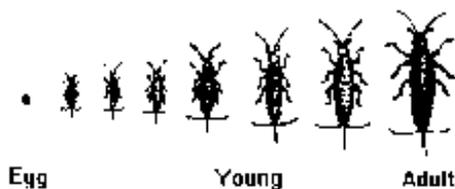
Metamorphosis is a Greek work meaning “change” or “change in form”. There are several different types of metamorphosis that different insects go through.

Complete metamorphosis – 4 stages – egg, larva, pupa, adult

Incomplete metamorphosis – 3 stages – egg, nymph, adult. The nymph looks like the adult insect except the adult insect may have wings.

No metamorphosis – 2 stages - egg, young. The young looks like the adult only smaller.

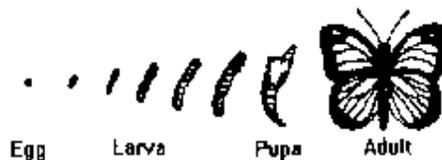
**No Metamorphosis**



**Incomplete Metamorphosis**



**Complete Metamorphosis**



The female uses its ovipositor to lay its eggs. Eggs are white and about 0.3 cm long. They are laid singly, but in loose clusters in 1 cm of deep damp soil. Crickets lay their eggs by burying them into the soft ground. Laying the eggs underground helps keep the eggs warm through the cold months. In the spring, the nymphs will hatch. When the nymphs first emerge, they are wingless and are very light in color. It takes about 30

days for the nymphs to become adults. During the time it takes for nymphs to become adults, they spend a lot of time hiding from potential predators. Crickets do not have skin like humans, instead, their outermost layer is made up of a hard shell, the **exoskeleton**. As the nymph grows into an adult, it must shed its exoskeleton. The nymphs shed or **molt** their exoskeleton 5 –13 times before they develop into adult crickets. After the final molt, the adult cricket develops wings. The adult cricket is about 2.5 cm long. The body and wings are chestnut brown. The head is large and black with a pair of long antennae. Adult crickets only live about three months.

### Types of Crickets

The black field cricket and the European house cricket are the two most common of the 900 species of cricket. Crickets are found under logs and rocks in fields, in pastures, and along roadsides. Many are nocturnal. Camel, hunch-back, and wingless crickets are also found in dark places. It is the field cricket and the house cricket that makes the chirping sound.

### Cricket Habitat

To create a cricket habitat in your classroom, pour the cedar shavings into the aquarium provided. The egg carton material can be placed in the aquarium to give the crickets a place to hide/rest. The food dispenser can be placed in the aquarium, as well. Twist off the dispenser and pour the food pellets into the cone-shaped end. Twist the cone-shaped part of the feeder in back onto the base. The crickets will eat the food gradually. The food will dispense out of the feeder as needed. To provide water for the crickets, wet the sponge provided and place it into the pie tin. The crickets will gather their needed moisture from the sponge.

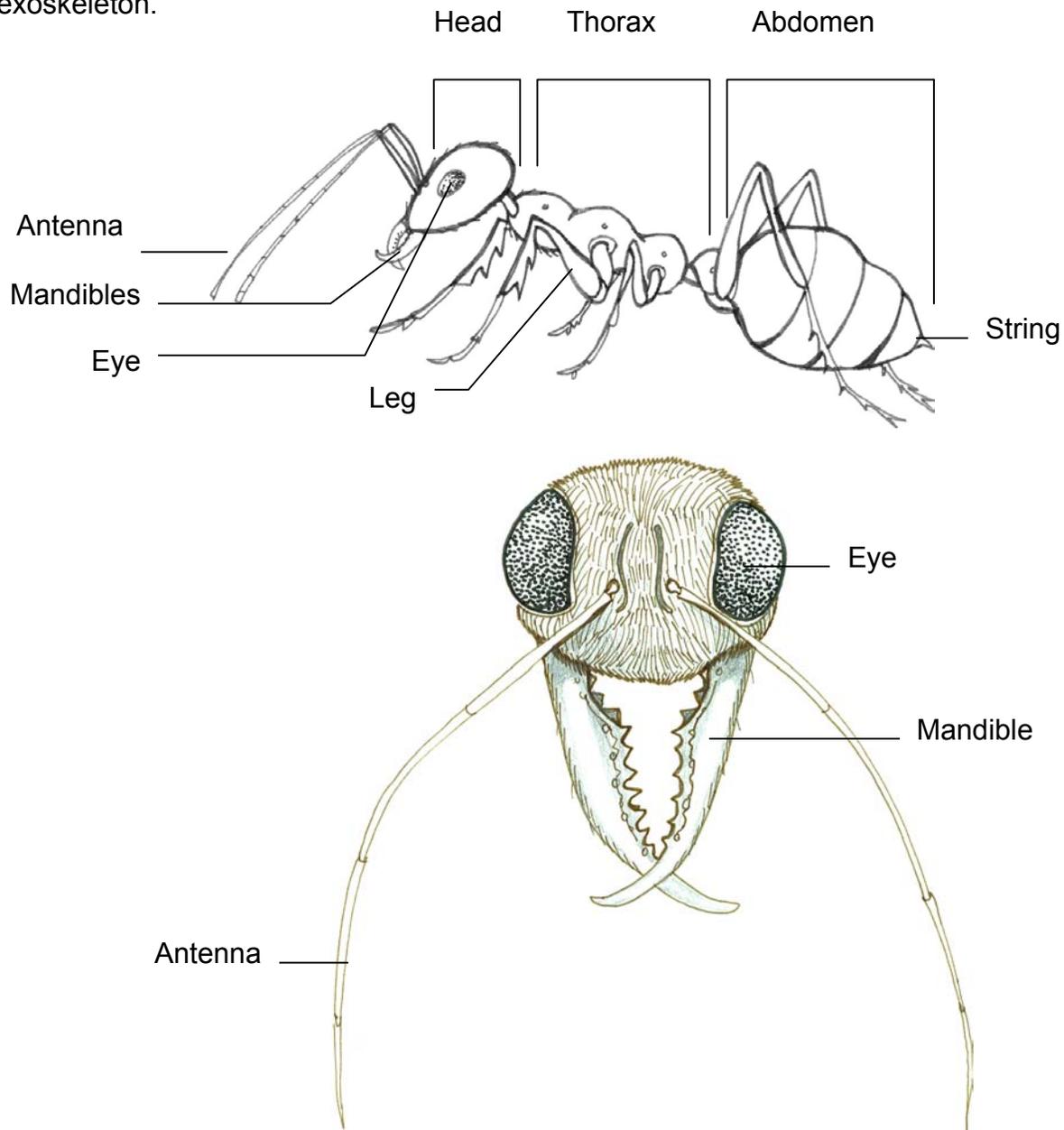
### Food and Water

Crickets are omnivores and scavengers that feed on organic materials, as well as decaying plant material, fungi, and seedling plants. They will also eat small pieces of stale bread, sour milk, cheese, cooked eggs, raisins, peanut butter, dry dog food pellets, rolled oats, and sugar. Five to eight square centimeters of food per week will feed several crickets. If crickets run out of food, they may consume each other.

### Ants

Like all insects, ants have six legs. Each leg has three joints. The legs of the ant are strong, so they can run quickly and support a lot of weight. Ants can lift 20 times their own body weight. Ants have two antennae, and they are used for their sense of touch, smell, taste, and hearing. When the ant is active, the antennae move almost constantly. Ants will tap the ground, pick up scents in the air, and/or examine pieces of food with their antennae. Ants also have touch organs on almost all their other body parts that consist of tiny hairs and spines. The head of the ant has a pair of large, strong jaws. The jaws open and shut sideways like a pair of scissors. Adult ants cannot chew and swallow solid food. Instead they swallow the juice which they squeeze from pieces of food. They throw away the dry part that is left over. The ant has two eyes, each eye is made of many smaller eyes. They are called **compound eyes**. These eyes have 6 to more than 1000 lenses. Because of their unique eyes, ants are able to detect motion without turning their head. Impressions from the lenses come together to form a picture that is broken up into parts. Some ants only have **ocelli**, which are three light sensitive

eyespot. Some ants do not have eyes at all. The abdomen of the ant contains two stomachs. One stomach holds the food for itself and the second stomach is for food to be shared with other ants of their colony. The outside of their body is covered with an exoskeleton.



**The digestive system** – When food is eaten by the ant, it passes to the food pouch. This is where the juices are squeezed out of the food. The ant swallows the juice and spits out the solid part. The liquid goes to the **crop** or social stomach. An ant will regurgitate from its crop to feed other ants. Some food goes to the **midgut**, where it is digested.

**The nervous system** – The ant's nervous system contains the ant's main brain and other smaller brains called **ganglia**. The main brain controls the ant's sight, touch,

movement, and smell. The ganglia are bundles of nerve cells. They help control some of the ant's actions.

**The heart** – The ant's heart is a long tube. It pumps a whitish blood from the abdomen to the brain. The blood spills out over the brain and is moved throughout its body to the abdomen. It then reenters the heart. As the blood flows, it nourishes the cells in the antennae, leg muscles, and other organs.

**The lungs** – Ants do not have lungs. They have **spiracles**. Air passes in and out of the spiracles located on the thorax. The spiracles connect to tubes called **trachea**. Oxygen enters the trachea, dissolves into the blood and mixes with a white pigment, giving ants white blood.

**The poison gland** – An ant's poison gland holds a chemical called **formic acid**. This chemical smells like vinegar. This acid is used by the ants to kill their prey and ward off attackers. The ants bite their enemy then spray the enemy with formic acid.

### **Life Cycle**

Ants have four distinct stages to its life cycle – egg, larva, pupa, and adult. After the queen mates, she will land on the ground and rub against a rock or another hard surface until her wings fall off. The muscles holding the wings on her body becomes nourishment for the eggs. The queen digs a hole in the ground and lays eggs there. The ant eggs are yellowish in color and are very small. They hatch in two to six weeks after they are laid and develop into white larvae or grubs. The queen feeds the larvae with her saliva. After a few weeks to several months, the larvae will turn into pupae. The pupae lie motionless and do not eat. In two to three weeks, they leave the pupa stage and become the adult insect. The life expectancy of an ant is 45-60 days.

### **Predators and Defenses**

Anteaters, spiders, frogs, toads, lizards, birds, and many kinds of insects prey on ants. Ants from different colonies also treat each other as enemies. The red ants have a sting that they use to defend themselves and their nest. Black ants and wood ants do not have a sting, but they can squirt a spray of **formic acid**. Some birds put ants in their feathers because ants squirt formic acid, which gets rid of parasites.

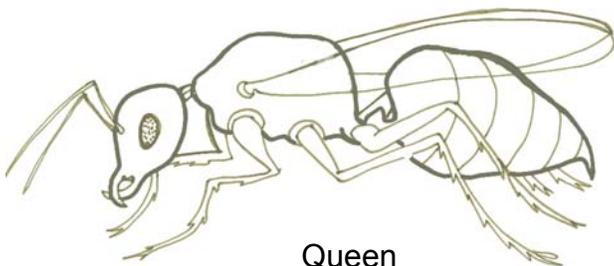
### **Ant colony**

Ants are social insects. They live in organized communities and work as a team. A community of social insects is called a **colony**. An ant colony may have a dozen to a million members. Members of the colony are divided into **castes** (classes) – the **queen**, **workers**, and **males**. A colony may have one or many queens. A queen's chief job is to lay eggs. During the mating season, the young queens and male ants (the princes) fly into the air to mate (both have wings). The queen then sheds her wings and finds a place to begin a new colony. The queen digs a tunnel in the ground and lays her eggs. For the rest of her life, the queen will lay eggs, and the worker ants will care for her, feed her, and keep her clean. A queen ant may live for as long as ten to twenty years.

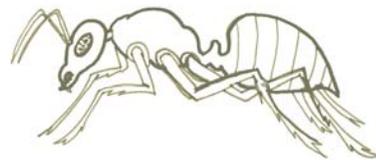
Most members of an ant colony are the workers. All the workers, like the queen, are females, but they are sterile. Worker ants live one to five years from birth. (The worker ants that are sent for the Ant Farm in this kit are in adult form and should live up to

several months.) The workers build the tunnels and bridges. You can see these ants moving sand, building rooms, and hauling loads of soil above ground to make anthills. Ant nests vary in size and in number of chambers. One chamber houses the queen and her eggs. Other chambers serve as nurseries to which the workers move the growing young. Many chambers serve as gathering or resting places for the workers. Other chambers may act as a storage place for food. The **feeder ants** search for and prepare food for the colony. These feeder ants find where the best food is, bring it to the colony and store it in the food storeroom that the workers have built. If a worker ant has found a good source for food, it leaves a trail of scent so that the other ants in the colony can find the food. Other worker ants care for the young of the colony. Worker ants will move the eggs and larvae of the colony to the top of the nest so they can be warmer. At night the worker ants move the eggs and larvae deep into the nest to protect them from the cold. The workers differ in size and shape. The largest workers, the soldiers, have a big head and large mandibles. The soldier's chief job in some colonies is to defend the colony from enemies. Each ant colony has its own smell so intruders can be recognized. There is also often a place in the colony where the ants dump their litter. When an ant is sick, the other ants haul it off to a place in the colony where it will not be near the healthy ants. When an ant dies, that ant is hauled away to the "graveyard", which is usually at the top of the hill and away from the rest of the colony. The sand from the tunnel excavation is piled on the dead ants.

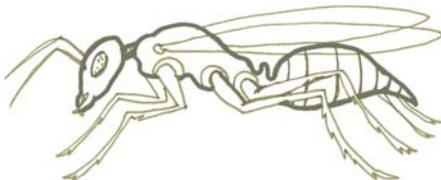
Males live in the nest only at certain times. The only job the males have is to mate with the queen. Males live only a few weeks or months before the mating flight. After mating, the males soon die.



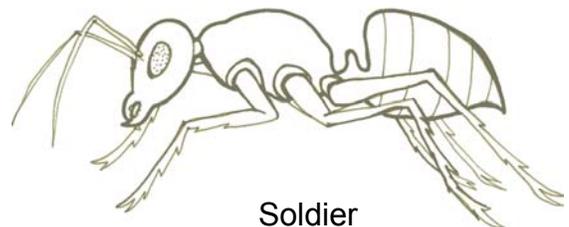
Queen



Worker



Male



Soldier

### **Groups of ants**

There are six groups of ants with different ways of life. **Army ants** are fierce hunters. Army ants prey on other insects and spiders. Army ants live above ground and do not build permanent nests. **Slave makers** attack the nests of other ants and kidnap the pupae. When the pupae become adults they help with the work of this new colony. A slave maker queen does not start a new colony, but she takes over the nest of another

species of ant. She kills or drives away the workers and may kill the colony's queen. In some ant colonies, there are **harvester ants**. These ants gather seeds and store them in special chambers of their nest. The ants tear off the husks of the seeds and chew the kernels. They squeeze out the liquid and swallow it. Some ants keep aphids, which feed on the juices of plants. These ants are called **dairying ants**. Inside the aphid, the juices turn to a sweet liquid. When the aphid is full of juices, the dairying ants stroke them, and the aphids drop their honeydew. The dairying ants gather up the juice. **Honey ants** gather honeydew from insects or plants and store it in their nests. **Fungus growers** cultivate gardens within their nests. They raise various fungi. The ants eat the knobs on the fungi. These ants fertilize their gardens with leaves, flower petals, and other plant material.

### **Helpful and Harmful Ants**

Ants are beneficial and harmful to farmers. Some species help farms by killing insects that damage crops. The underground nests of the ant break up the soil and loosen it. Loose soil absorbs more water.

Some dairying ants protect aphids and other insects that harm crops. Carpenter ants damage houses by tunneling through wooden beams.

### **To Start Your Ant Farm**

1. Turn the farm upside-down and remove the base.
2. Cut a small corner off the bag of sand with scissors. Carefully pour sand into the Ant Farm until the lower half is filled.
3. Replace the base. Make sure it snaps firmly into place.
4. Turn Ant Farm rightside-up and remove top frame.
5. Slowly pour in about  $\frac{3}{4}$  cup of clear drinking water. Sand should be evenly damp but not soggy.
6. Using the supplied coffee stirrer or a piece of wire, push the cotton stoppers halfway into the sand. This will start a tunnel. Replace top frame securely.

**Be sure you send in your stock certificate for the ants.** The ant supply will be mailed to you. All the ants are non-breeding worker ants. Dropping a tiny bit of sugared water into the Ant Farm before you stock it will provide nourishment for the ants when they are finally put in the farm. When your ants arrive, put them in the refrigerator for about 15 minutes. The cold will slow the ants down, and it will be much easier to put them in the farm. When they are placed in the farm, they will warm up and start working. To place the ants in the farm, remove the center cap on the top frame or remove the entire top frame. Carefully open the plastic vial of ants and squeeze it so it fits in the hold on top of the Ant Farm. Shake or tape the tube so the ants fall in. The ants should not be touched because they may bite or sting to protect themselves.

It may be tempting to add ants found outside to the Ant Farm colony, however, the ants that are placed in the farm will be viewed as intruders and a fight may begin. If you want to put ants from your own neighborhood into the farm, all the ants in the farm must be from your own neighborhood.

Be sure the Ant Farm is away from direct sunlight and cold temperatures. Extreme temperature changes will harm the ants. Room temperature of 18 to 24 degrees Celsius (65 to 75 degrees Fahrenheit) is ideal.

For obvious reasons, be careful not to shake the Ant Farm or turn it upside down. The tunnels will be destroyed, and if the ants are disturbed too much they will die.

### **Food and Drink**

Be sure not to overfeed your ants. Included with the ant farm is a year's supply of specially formulated ant food. Seeds, grains, vitamins, and minerals have been blended together to give the ants the nutrients they need. Once a week, drop in two or three grains down the food hole in your ant farm. Too much food in the farm can cause mold to grow in the ant farm. Ants do love fruit. A pinhead-size sliver of an apple is sufficient food for a week. Other foods to try are bread crumbs, two or three birdseeds, a drop of honey mixed with water, leaves (especially leaves from fruit trees), a dead fly, or a tiny piece of hamburger.

Be sure not to provide too much water for the ants. Use the eyedropper to add five or six drops of water every two days. The sand should not get soggy. The eyedropper device is to be used as a liquid feeder. Fill a glass with water (slightly sugared if you like). Submerge the tip of the feeder in the water. Squeeze the feeder bulb and release slowly. The eyedropper will then fill. Put several drops of water through the water hole (labeled on the Ant Farm). Add enough water so the soil is damp but not soggy. The soil should be moist at all times. Condensation on the sides of the Ant Farm is normal.

# Learning Experience 1: What Do You Know About Crickets?

**Objective:** Students will use their background knowledge to contribute to a class web on crickets.

---

**Materials:**

**For the class:**

Book - The Very Quiet Cricket by Eric Carle  
Chart paper\*  
Felt-tip markers\*

\*provided by teacher

**Preparation:**

Read background information on pages 3-5.

**Evaluation Strategy:**

Students will contribute to a class web that shows their background knowledge about crickets.

**Basic Skills Development:**

Discussing  
Brainstorming

**Vocabulary:**

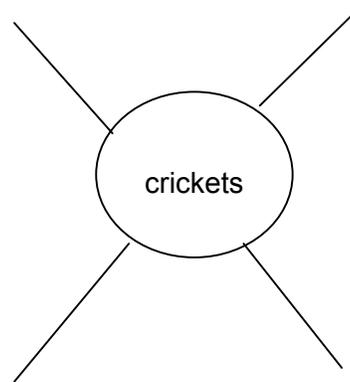
cricket  
insect

*What do you know about crickets?*

In a class discussion, create a web that shows what the students know about crickets. Chart the web and post it in class. Students can add to the web throughout the unit.

**Discussion Questions:**

What do you know about crickets?  
Where have you seen crickets?  
What have you seen crickets do?  
Where do crickets live?  
How do crickets move?  
What do crickets look like?



Read the book The Very Quiet Cricket by Eric Carle to students and ask what new information they learned about crickets from the book. Add new information to the class web.

It may be difficult to find crickets out on the school grounds because many crickets are nocturnal. Crickets are found under rocks and logs in meadows

## **Learning Experience 1 continued**

### **Page 2**

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and pastures. Some are found along roadsides. If none are found on school grounds, students may want to look in their yards for crickets in the evening. Some may not see them, but many will probably hear them. If some students do see or hear crickets, ask them to describe their experience. Compare student experiences to gain further knowledge about crickets.

## Learning Experience 2: What Is a Cricket?

**Objective:** Students will make a prediction of how they think the crickets will react to their classroom habitat and contribute to daily diary entries on the crickets.

### **Materials:**

#### **For each student:**

Insects Student Activity Book

#### **For the class:**

Cricket coupon

Aquarium

Bag cedar shavings

Cricket food

Feeder station

Sponge

Pie tin

Chart paper\*

Felt-tip markers\*

Water\*

\*provided by teacher

### **Preparation:**

Read background information on pages 3-5. The cricket habitats will need to be prepared before the crickets arrive in the classroom. When you are ready for the crickets to be sent to your classroom, **send the coupon that is in the kit** to the company. Allow **2-3 weeks** for delivery. Notify the school office that you will be receiving live perishable materials and that you should be notified as soon as they arrive.

### **Evaluation Strategy:**

Students will draw and explain their predictions of what the crickets will do when they are placed in the cricket habitat. Students will make accurate observations of changes in the habitat and contribute to a class diary on the cricket habitat.

### **Basic Skills Development:**

Discussing    Brainstorming

Observing    Discussing

Describing    Predicting

### **Vocabulary:**

Habitat    insect  
cricket

### *How do insects create a home?*

Show students the aquarium habitat for the crickets without the crickets. Discuss what a habitat is and the necessary parts of the cricket habitat. Ask students what they think will happen when the crickets are placed in the habitat. Ask students to draw a picture of what they think the crickets will do when they are placed inside the habitat. A template for the picture can be found on the Activity Sheet for Learning Experience #2 in the Insects Student Activity Book. Ask students to share and describe their pictures.

Create a classroom diary of how the crickets react to their new habitat. This diary can be written/drawn on chart paper or in book form. Discuss with students the habitat changes from day by day.

### **Discussion Questions:**

How do you think the crickets will react to their new habitat?

How will the crickets change the habitat?

What changes do you see in the cricket habitat today that you did not see yesterday?

Describe what the crickets are doing in the habitat?

Do the crickets act like a community in their habitat?

Do the crickets appear to work together?

## Learning Experience 3: What Do Crickets Look Like?

**Objective:** Students will observe crickets and draw a picture of their body parts.

---

**Materials:**

**For each pair of students:**

2 Insects Student Activity Books

Double lens magnifier

Insect observation box

**For the class:**

Cricket habitat

Metric ruler\*

\*provided by teacher

**Preparation:**

Read background information on pages 3-5.

**Evaluation Strategy:**

Students will draw their observations of the parts of a cricket and will name the major parts of all insects.

**Basic Skills Development:**

Discussing

Observing

Discussing

Describing

**Vocabulary:**

thorax

abdomen

insect

antenna

*What do crickets look like?*

Students pairs are to use the double lens magnifiers to examine a cricket closely to see what it looks like. Insect observation boxes are also provided, however, it will take patience to get the cricket into the box. Try getting the cricket to crawl into a paper tube and then tap the tube over the box.

Students are looking specifically for the parts of a cricket. Students can then draw a picture of what they see on the Activity Sheet for Learning Experience #3 in the Insects Student Activity Book.

The cricket parts identified are common to all insects as students will see while exploring insects throughout the unit. Have students share pictures and discuss what parts are common in all the pictures.

Sing cricket body song with students (see page 15). In addition, the crickets have wings and not all insects have wings. Students will realize this as they explore insects throughout the unit. If the crickets you receive do not have wings, the insect may still be in a nymph stage (see information on life cycle on pages 4 and 5.)

Students can review the parts of the insect by singing the parts of an insect song again or by playing the Simon Says Game (page 16) to show motions for the cricket body parts.

# Learning Experience 3 continued

## Page 2

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### **Cricket Body Song (Tune - Must be Santa)**

*What has three body parts and six legs?*

*Crickets have three body parts and six legs.*

*What has a thorax, abdomen, and head?*

*Crickets have a thorax, abdomen, and head.*

*Three body parts,  
with six legs*

*thorax, abdomen*

*and a head. (clap, clap)*

*Must be crickets (clap, clap)*

*Must be crickets (clap, clap)*

*Must be crickets in our room.*

*What has three body parts and two legs?*

*I have three body parts and two legs.*

*What has a chest, abdomen, and head?*

*I have a chest, abdomen, and head.*

*Three body parts,  
with two legs,*

*chest, abdomen,*

*and a head (clap, clap)*

*Must be terrific (clap, clap)*

*Must be terrific (clap, clap)*

*Must be terrific, terrific me.*

### **Parts of an Insect sung to the tune of Head, Shoulders, Knees, and Toes (act out each part):**

*Head, thorax, abdomen, abdomen (place hands on each of your body parts)*

*Head, thorax, abdomen, abdomen*

*Head (touch your head)*

*Antenna (hold up two fingers on each hand and place them on head)*

*Thorax (touch chest)*

*Legs (hold up three fingers on each hand and place them near armpits)*

*And wings (fold arms so hands are in armpits - flap wings)*

*Head, thorax, abdomen, abdomen (touch each body part)*

# Learning Experience 3 continued

## Page 3

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### **Simon Says**

*(Motions for Cricket body parts)*

*Head (touch your head)*

*Thorax (touch your thorax)*

*Abdomen (touch your stomach)*

*Six Legs (hold three fingers out from each hand and place hands along your sides)*

*Eyes (touch your eyes)*

*Mouth (touch your mouth)*

*Antennae (place index fingers sticking up from the top of your head)*

*Wings (fold arms so elbows are sticking out from your sides and flap them up and down like wings)*

### **Discussion Questions:**

What parts of the cricket can you identify?

How many of each part can you count?

Does every cricket have the same parts and the same number of parts?

What are the functions of each part?

What colors are the crickets?

Where do you think crickets hide if this is their color?

Ask students to observe how the crickets move. Discuss how they moves their legs and how they jump. Also, observe the distance and height of their jump. Use a metric ruler to measure the distance, if possible.

# Learning Experience 4: Cricket Food

**Objective:** Students will predict the foods they think the crickets would like to eat and participate in an experiment that tests the food preferences of the cricket.

**Materials:**

**For the class:**

- Cricket habitat
- Sugar cubes
- Oatmeal
- Sunflower seeds
- Cricket food
- Raisins\*
- Bread\*
- Peanut butter\*
- Dog food pellets\*
- Chart paper\*
- Felt-tip markers\*

\*provided by teacher

**Preparation:**

Read background information on page 5.

**Evaluation Strategy:**

Students will predict the type of food preferred by the cricket and then describe their observation of the crickets' preferences.

**Basic Skills Development:**

- Discussing
- Observing
- Describing
- Predicting

**Vocabulary:**

- habitat
- scavenger

*What food do crickets eat?*

Create a list with students of what they think crickets like to eat and ask students to give reasons why they think crickets like to eat those foods.

Crickets are scavengers and feed on organic materials, decaying plant material, fungi, and seedling plants. Crickets are given food in their habitat, however, we are looking to see what other types of food the cricket likes. Place a small amount of food in the cricket habitat and observe their reaction. Choose four or five different suggestions from the student list and bring those food suggestions into class (sugar, sunflower seeds, and oatmeal have been provided in this kit). Other food suggestions are listed in the materials list. Before the different types of food are dropped into the habitat, ask students to predict which food they think the crickets will like the best.

Sugar	Seeds	Cereal	Etc.

Compare food preferences of the cricket and the ant.

**Discussion Questions:**

- What types of food do you think crickets like to eat?
- What foods are used in the classroom?

## Learning Experience 4 continued

### Page 2

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Why do you think crickets like that type of food?

How do the crickets react when we drop \_\_\_\_\_ into the farm?

Are there certain crickets that seem to look for or take care of the food that has been dropped into the habitat?

Do they seem to prefer one food over the other?

Are those types of food available outdoors?

What foods are outdoors?

How does the cricket get its food?

# Learning Experience 5: Cricket Booklet

**Objective:** Students will review what they learned about crickets and create a booklet displaying their knowledge.

---

**Materials:**

**For each student:**

Insects Student Activity Book

**For the class:**

Cricket habitat  
Crayons/colored pencils\*  
Book binding material (yarn, tape, stapler)\*

\*provided by teacher

**Preparation:**

Read background information on pages 3-5. Gather materials necessary to put together student booklets.

**Evaluation Strategy:**

Students will summarize their knowledge of crickets by creating a booklet on crickets.

**Basic Skills Development:**

Describing  
Observing

**Vocabulary:**

insect  
booklet  
cricket

*What do we know about crickets?*

In the Learning Experience #1 of the unit, students were asked what they knew about crickets. Now that several learning experiences on crickets have been completed, students can use the Activity Sheets for Learning Experience #5 in the Insects Student Activity Book to create a booklet on crickets. There are sentences started on each page. After writing his/her name on the booklet cover, invite each student to dictate an ending for the sentence on each page to demonstrate what he/she knows about the appearance, habitats, and activities of crickets. Students can then illustrate their sentences in the squares on each page. This can be done individually or in small groups.

Example: Crickets have... six legs.  
Crickets live... in meadows.  
Crickets can...jump.

Students can share books with each other, with other grade levels, and with their families.

## **Important!**

**If you ordered the Insects Kit during the winter months (Nov. – Mar.), the ants are not available. Ants are available during the months of Sept., Oct., April, May, and June.**

**Please continue to Learning Experience #14.**

# Learning Experience 6: What Do You Know About Ants?

**Objective:** Students will use their background knowledge to contribute to a class web about ants.

**Materials:**

**For the class:**

Chart paper\*

Felt-tip markers\*

\*provided by teacher

**Preparation:**

Read background information on pages 5-10.

**Evaluation Strategy:**

Students will contribute to a class web that shows their background knowledge about ants.

**Basic Skills Development:**

Discussing

Brainstorming

**Vocabulary:**

ant

insect

*What do you know about ants?*

In a class discussion, create a web that shows what all the students know about ants. Chart the web and post it in class. Students can add to the web throughout the unit.

**Discussion Questions:**

What do you know about ants?

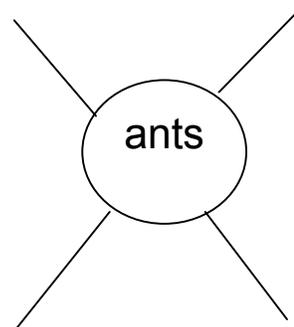
Where have you seen ants?

What have you seen ants do?

Where do ants live?

How do ants move?

What do ants look like?



Take students on a search for ants outside the classroom. Because ants live almost anywhere, they are easy to find, unless the weather is turning cold. Caution students not to touch the ants.

Observe them for a while and comment on the ants' appearance and actions. Share some interesting facts about ants that can be found in the background information of this teacher's manual. This observation may be the time to prepare students for the ant observations they will be making in the classroom.

# Learning Experience 7: What Is an Ant?

**Objective:** Students will make a prediction of how they think the ants will change the ant farm and contribute to daily diary entries of changes in the ant farm.

## **Materials:**

### **For each student:**

Insects Student Activity Book

### **For the class:**

Ant coupon

Ant farm

Eyedropper

Coffee stirrer/wire

Sand

Chart paper\*

Felt-tip markers\*

\*provided by teacher

## **Preparation:**

Read background information on pages 5-10. When you are ready for the ants to be sent to your classroom, **send the coupon that is in the kit** to the company. Allow **2-4 weeks** for delivery. Notify the school office that you will be receiving live perishable materials and that you should be notified as soon as they arrive.

## **Evaluation Strategy:**

Students will draw and explain their predictions of what the ants will do when they are placed in the farm. Students will make accurate observations of changes in the ant farm and contribute to a class diary on the ant farm.

## **Basic Skills Development:**

Discussing     Brainstorming

Observing     Discussing

Describing     Predicting

## **Vocabulary:**

ant farm

insect

*How do ants create a home in an ant farm?*

Show students the ant farm with the sand included but no ants. Discuss the parts of the farm and ask students what they think will happen when the ants are placed in the farm. Ask students to draw a picture of how they think the farm will change when the ants are placed inside the farm. A template for the picture can be found on the Activity Sheet for Learning Experience #7 in the Insects Student Activity Book. Ask students to share and describe their pictures.

Create a classroom diary of how the ant farm changes. This diary can be written/drawn on chart paper or in book form. Students will notice significant changes at first. Changes will become smaller and smaller as the ants complete their home. Discuss with students how the farm has changed from day to day. Compare the cricket habitat to the ant habitat.

## **Discussion Questions:**

What do you think the ants will do when they are put into the farm?

How will the ants change the ant farm?

What changes do you see in the farm today that you did not see yesterday?

Describe what the ants are doing in the farm?

How does the cricket habitat compare to the ant habitat?

Do the ants act like a community in their habitat?

Do the ants appear to work together?

## Learning Experience 7 continued

### Page 2

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Sing ***Ants Are Busy to the Turn of Where is Thumbkin?***

*The ants are busy,*

*The ants are busy,*

*Yes they are,*

*Yes they are,*

*Busy finding some food,*

*Busy building their home,*

*Work away,*

*Work away.*

# Learning Experience 8: What Do Ants Look Like?

**Objective:** Students will observe ants and draw a picture of their body parts.

## **Materials:**

### **For each pair of students:**

2 Insects Student Activity Books  
Double lens magnifier

### **For the class:**

Ant farm  
Book – Ants, Ants, Ants  
Black stamp pad  
Ant anatomy poster  
Crayons/colored pencils\*

\*provided by teacher

## **Preparation:**

Read background information on pages 5-7.

## **Evaluation Strategy:**

Students will draw their observations of the parts of an ant and will name the major parts of all insects.

## **Basic Skills Development:**

Discussing  
Observing  
Discussing  
Describing

## **Vocabulary:**

thorax  
abdomen  
insect

## **Extension:**

Instead of drawing the ant, ask the student to press a fingertip into a black stamp pad and onto his/her activity sheet three times to make three connected ovals representing the ant's body. Provide crayons or colored pencils so he/she can add six legs and two antennae to the picture.

## *What do ants look like?*

Students pairs are to use the double lens magnifiers to examine an ant and look at its body parts. Students are looking specifically for the parts of an ant. Students can then draw a picture of what they see on the Activity Sheet for Learning Experience #8 in the Insects Student Activity Book. All insects have three body parts (head, thorax, and abdomen), six legs, and two antennae. Have students share pictures and discuss what parts are common in all the pictures. Ask students to compare what they see when they observe the crickets to what they observed when they looked at the ants. Again, all insects have three body parts (head, thorax, and abdomen), six legs, and two antennae. Even though the parts of each insect look different, because those parts are all present, the animal is considered an insect.

## ***Parts of an Insect sung to the tune of Head, Shoulders, Knees, and Toes (act out each part):***

*Head, thorax, abdomen, abdomen*

*Head, thorax, abdomen, abdomen*

*Head*

*Antenna*

*Thorax*

*And Legs*

*Head, thorax, abdomen, abdomen*

Use the book, Ants, Ants, Ants and the ant anatomy poster to further emphasize the parts of the ant that the students observe.

Ask students to observe how the ants move. Discuss how they move their legs and the distance of their movement. Ask groups of three students to demonstrate the movement.

# Learning Experience 9: Ant Homes

**Objective:** Students will observe the ant farm to discuss what each “room” in the farm is used for and compare the farm to their own community.

**Materials:**

**For the class:**

- Ant farm
- Chart paper\*
- Felt-tip markers\*

\*provided by teacher

**Preparation:**

Read background information on pages 7-10.

**Evaluation Strategy:**

Students will make observations of the ant farm and make comparisons between the ant farm community and their community.

**Basic Skills Development:**

- Discussing
- Observing
- Describing
- Predicting

**Vocabulary:**

community

*How are ant farms like communities?*

Observe the ant farm as a class once many of the tunnels have been built and “rooms” have been constructed.

Discuss with students what they see happening in the ant farm. Observe the ant farm at the beginning of the day and at the end of the day. Compare how the life in the ant farm changes.

**Discussion Questions:**

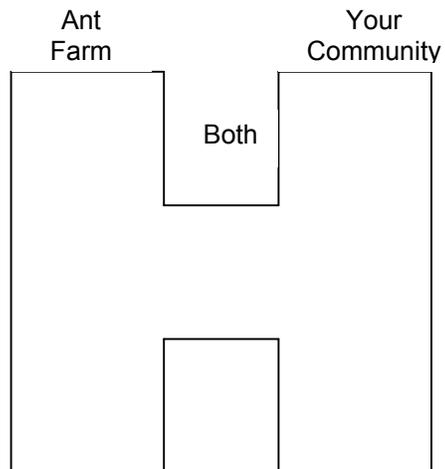
What do you think each “room” in the farm is used for?

How do you know?

What’s happening in the ant farm in the beginning of the day? End of the day?

Ask students to think about what they discovered about the ant farm and compare the ant farm to their own community.

Create an “H” chart and use the chart to make a comparison between the ant farm and their own community.



## Learning Experience 9 continued

### Page 2

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**Extension:**

As students are on the playground/school grounds, keep a running list of where ants are found. Also note differences in color and size of the ants found in different locations.

# Learning Experience 10: Ant Jobs

**Objective:** Students will observe the worker ants and describe the worker ants' jobs.

**Materials:**

**For the class:**

Ant farm  
12 double lens magnifiers  
Black stamp pad  
Index cards\*  
Crayons/colored pencils\*  
Chart paper\*  
Felt-tip markers\*  
Tape\*

\*provided by teacher

**Preparation:**

Read background information on pages 7-9.

**Evaluation Strategy:**

Students will make observations of the worker ants and give reason for preferring one ant job over the others.

**Basic Skills Development:**

Discussing  
Observing  
Describing  
Predicting

**Vocabulary:**

job  
worker  
community

*What jobs do ants have?*

There are three types of ants in a colony: a queen, a few males, and thousands of workers (all female). A queen's job is to lay eggs that will grow into new ants. (In the ant farm provided with this kit, there is no queen ant.) A male's job is to mate with the queen. The worker ants do all the rest of the work. Each worker ant has a job. Ask students to look carefully at the ant farm with a double lens magnifier to see if they can identify what some of the worker ants' jobs might be and give reasons for their ideas. List on the chalkboard all the jobs that the students think they observed in the farm. The main jobs that the ants may have in their colony are listed below. Before giving the job description for each type of job ask students what they think the worker ants would do in that type of job.

Nurse: cares for eggs and larvae  
Construction Worker: digs new rooms and tunnels and carries dirt outside.

Hunter: goes in search of food and brings it back to the nest.

Security Guard: defends the nest against enemies.

See if some of the students' ideas of ant jobs fit into any of the categories. Go back to the ant farm and, again, observe the worker ants. Ask students to look carefully to see if they can identify ants that are doing each of the jobs described. Ask students why they think each job is important to the ant farm.

# Learning Experience 10 continued

## Page 2

### Discussion Questions:

What jobs do the worker ants perform?

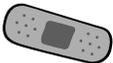
What job do you think is the most important and why?

If you were a worker ant, what job would you be and why?

What happens when we sprinkle crumbs into our ant farm? Do the hunters come looking for the food?

How do the construction workers differ from the other ant workers? Are they more active?

Ask each student to vote for the job he/she would like to have if he /she were a worker ant. Prepare a class graph to show the results by first labeling four index cards with the four job titles. Give each student an index card and ask him to write his/her name on it. Ask the student to press a fingertip into a black stamp pad and onto his/her card three times to make three connected ovals representing the ant's body. Provide crayons or colored pencils so he/she can add six legs and two antennae to the picture. Ask each student to tape his/her card next to the job he/she would prefer and give an explanation for his/her choice. Once the graph is completed, the concepts of more, fewer, and equal can be discussed as the votes are counted.

<b>Nurse</b> 	Place student cards here			
<b>Construction Worker</b> 	Place student cards here			
<b>Hunter</b> 	Place student cards here			
<b>Security Guard</b> 	Place student cards here			

# Learning Experience 11: Ant Food

**Objective:** Students will predict which foods they think the ants would like to eat and participate in an experiment that tests the ants' food preferences.

**Materials:**

**For the class:**

- Ant farm
- Sugar cubes
- Sunflower seeds
- Ant food
- Oatmeal
- Baskets/containers\*
- Food toys/paper food\*
- Chart paper\*
- Felt-tip markers\*

\*provided by teacher

**Preparation:**

Read background information on page 10.

**Evaluation Strategy:**

Students will predict food preferences of the ant and make conclusions based on observations made in the class experiment.

**Basic Skills Development:**

- Discussing
- Observing
- Describing
- Predicting

**Vocabulary:**

- community
- experiment
- teamwork

*What foods do ants eat?*

Create a list with students of what they think ants like to eat and ask students to give reasons why they think ants like to eat those foods.

Different kinds of ants like to eat different types of food. The foods range from insects to seeds to sweets. One way to test the food that the ants in our ant farm like to eat is to place small amounts of the food in the farm and observe their reaction (similar to the experiment with the crickets).

Choose four or five different suggestions from the student list and bring those food suggestions into class (sugar, sunflower seeds, and oatmeal have been provided in this kit to try with the ants). Before the different types of food are dropped into the farm, ask students to predict which food they think the ants will like the best.

Sugar	Seeds	Oatmeal	Etc.

When the food is dropped into the farm, ask students to observe the ants' reactions and discuss.

**Discussion Questions:**

What types of food do you think ants like to eat?

Why do you think ants like that type of food?

How do the ants react when we drop \_\_\_\_\_ into the farm?

# Learning Experience 11 continued

## Page 2

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Are there certain ants that seem to look for or take care of the food that has been dropped into the farm?

Do they seem to prefer one food over the other?

Does the cricket and ant have similar food preferences?

As students are observing the ants collecting their food, this also may be a good time for students to see the strength ability of the ants. Ants can lift objects 50 times their weight. Students can look to see this if the ants pick up the food that is dropped into the farm.

Role-play with students the teamwork that ants use to bring food back to their nests. This can be done by filling two baskets or containers with plastic food toys or pieces of paper with food drawn on it in one area of the room. Divide the class into teams of five students each. Two teams at a time may play. Designate a large open area of the room as the ants' nest. Place the baskets or containers side by side, equal distance from both nests. Each team of students should begin in the nest. One ant from each team crawls to his/her team's designated basket and removes one piece of food. He/she then crawls back to the team's nest, carrying the food under his/her chin to imitate the way an ant carries food in its jaws. That student makes a second trip to the basket accompanied with a second team member. The second team member also returns with a piece of food. The game continues by adding one more ant on each trip, until one team has emptied all the food from its basket into its nest.

### **Discussion Questions:**

Describe how ants bring food back to their nests or colony.

Why do you think they use teamwork to bring food back to their nests?

As we place food into our farms, do we observe any teamwork by the ants in bringing the food into the tunnels or elsewhere in the farm?

## Learning Experience 12: Ant Booklet

**Objective:** Students will review what they learned about ants and create a booklet displaying their knowledge.

---

**Materials:**

**For each student:**

Insects Student Activity Book

**For the class:**

Ant farm

Crayons/colored pencils\*

Book binding material (yarn, stapler, tape)\*

\*provided by teacher

**Preparation:**

Read background information on pages 5-10.

**Evaluation Strategy:**

Students will summarize their knowledge of ants by creating a booklet on ants.

**Basic Skills Development:**

Describing

Observing

**Vocabulary:**

insect

booklet

ants

*What do we know about ants?*

In the first learning experience of the unit, students were asked what they knew about ants. Now that several learning experiences on ants have been completed, students can use the Activity Sheet for Learning Experience #12 in the Insects Student Activity Book to create a booklet on ants. There are sentences started on each page. After writing his/her name on the booklet cover, invite each student to dictate an ending for the sentence on each page to demonstrate what he/she knows about the appearance, habitats, and activities of ants. Students can then illustrate their sentences in the squares on each page. This can be done individually or in small groups.

Example: Ants have... six legs.  
Ants live... underground.  
Ants can...carry food in their  
jaws.

Students can share books with each other, with other grade levels, and with their families.

# Learning Experience 13: Life Cycles

**Objective:** Students will name the stages of the ant and cricket life cycle and describe the importance of each stage.

**Materials:**

**For each student:**

Insects Student Activity Book

**For the class:**

Ant anatomy poster  
Cricket life cycle display  
Crayons/colored pencils\*

\*provided by teacher

**Preparation:**

Read background information on pages 4, 5, and 7.

**Evaluation Strategy:**

Students will demonstrate through words or pictures their understanding of the cricket's life cycle and the ant's life cycle.

**Basic Skills Development:**

Observing  
Comparing  
Describing  
Discussing

**Vocabulary:**

life cycle  
metamorphosis  
cricket  
ant

*What does the life cycle of an ant and cricket look like?*

Discuss with students how humans change as they grow older. Humans have a life span and so do insects. Different insects have different types of life cycles. Some insects have a four-stage life cycle, like the ant. Others have a three-stage life cycle, like the cricket. The changes an insect goes through as it moves through its life cycle is called a **metamorphosis**.

Using the ant anatomy chart, discuss with students the life cycle of an ant. The life cycle is pictured on the bottom of the ant anatomy chart. The egg, larva, pupa, and adult are pictured. Discuss with students how long it takes the ant to move through each stage and how each stage looks different. Compare the different appearance of each stage and what the main function of each stage is for the ant's growth.

The cricket mounted display provided in the kit, shows students first hand the three stages of the cricket life cycle. Compare the cricket life cycle to the ant life cycle. Notice that the cricket grows in its nymph stage until it grows wings. With wings, the cricket is considered an adult.

**Discussion Questions:**

How do humans change as they get older?

What happens when insects grow and change?

## Learning Experience 13 continued

### Page 2

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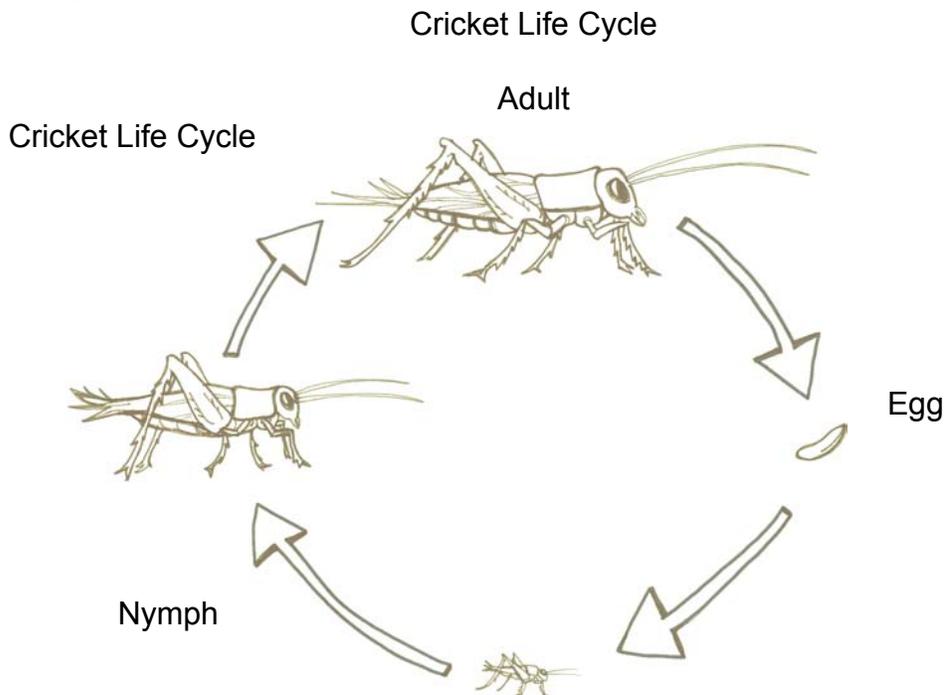
What are the stages of the ant life cycle?

What are the stages of the cricket life cycle?

How is each stage important?

What stage are our crickets in now?

What stage are our ants in now?



Students can role play the four stage life cycle (metamorphosis) of the ant. Begin with the egg (students curl up in a squatting position). Larva crawls out of the egg (begin to stretch out). After growing and growing, the larva goes into the pupa stage (be still and hold arms close to chest). The adult insect then crawls out of the pupa (students break out of pupa and begin crawling as adult ants).

A similar role play can be done with the cricket, except the four stages turn to three in the incomplete metamorphosis. After the cricket crawls out of the egg, it is in the nymph stage. The cricket just grows and grows (students can pretend they are getting larger and larger). The adult insect has wings (students use arms to pretend they have wings in adult stage).

On the Activity Sheet for Learning Experience #13 in the Insects Student Activity Book, students can draw a picture of one of the stages of the ant life cycle and one stage of the cricket life cycle. Students can then dictate a sentence about the stage of the life cycle they have chosen. The teacher can write their sentence on the lines under the picture they drew. Students with different pictures of the life cycle can then stand in sequential order of the ant and cricket life cycle holding their pictures in front of them. Students can then say their sentence about the life cycle stage they have chosen.

# Learning Experience 14: What is an Insect?

**Objective:** Students will examine various animals and give reasons why the animal is or is not an insect.

---

**Materials:**

**For the class:**

Pictures of various animals  
Chart paper\*  
Felt-tip markers\*

\*provided by teacher

**Preparation:**

Prepare chart prior to this learning experience.

**Evaluation Strategy:**

Students will decide if an animal is an insect or not and give reason for their answer.

**Basic Skills Development:**

Observing  
Discussing  
Comparing  
Describing

**Vocabulary:**

insect  
antenna  
thorax  
abdomen

*What makes an animal an insect?*

Pictures of various animals are provided. Some of the animals are insects and others are not. For example, one of the pictures is of a spider. Discuss the pictures of the different animals and give reason why each animal is an insect. Students should notice that each insect has six legs, three body parts, and two antennae. They should also notice that some insects have wings and others do not. The spider, on the other hand, has only two body parts and has eight legs. Therefore, the spider is not an insect. Create a chart with the questions listed below. If students answer yes to each question the animal is an insect.

Does the animal have six legs?  
Does the animal have three body parts?  
Does the animal have two antennae?

Students could also bring animals that they think may be insects into the classroom and create additional habitats (ex. flies, grasshoppers, fireflies, ladybugs, etc.). Students can spend some time observing these animals and using the chart to decide if the animal is an insect or not. The previous investigations done on ants and crickets can be done with additional insects students brought into the classroom. The results of these investigations can then be compared to those of the ant and cricket.

## MORE IDEAS

### Language Arts

- ◆ Read the book, I Can't Said the Ant, and lead a discussion with students about how the ants in the story cooperated to get the job done and how real ants cooperate for the good of the colony. Find examples throughout the day in which students cooperate and assist one another.
- ◆ Create stories/poems about the ants/crickets observed.

### Books:

Ant Cities by Arthur Domos  
Two Bad Ants by Arthur Dorros  
I Can't Said the Ant by Polly Cameron  
One Hundred Hungry Ants by Elinor Pinczes  
Amazing Anthony Ant: A Flap, Max, Song, And Search Book by Lorna and Graham Philpot  
Step By Step by Diane Wolkstein  
Effie by Beverley Allinson  
The Ant and the Elephant by Bill Peet  
The World of Ants by Melvin Berger  
Chirping Crickets by Melvin Berger  
The Cool Crazy Crickets to the Rescue by David Elliott  
Grasshoppers and Crickets by Theresa Greenaway  
Chirping Insects by Sylvia Johnson  
Crickets by Cheryl Coughlan

### Art

- ◆ Use craft materials to create an insect of choice. Students must be sure their insect has the required body parts.

### Math

- ◆ You can tell the temperature on summer evenings by counting the number of chirps over a 10 second period and using the chart provided below. These can be tape recorded for use in the classroom. If crickets are chirping in the classroom, students can count chirps and predict the temperature.

<u>Chirps/10 seconds</u>	<u>Temperature</u>
5	47
10	54
15	61
20	68
25	75
30	82
35	88
40	96

Another way to get an approximate temperature is to count the number of chirps in 15 seconds and add 40 = F.

### **Social Studies**

- ◆ After students complete the investigation on ants, focus on the concept of community. Discuss the important parts of the community and jobs in the community.

### **Science**

- ◆ If there is a field the students' homes, ask them to take a walk into the field and locate and observe field crickets in the wild.
- ◆ During their life span of about three months, the female cricket can lay between 30-100 eggs. Many of these crickets never make it to mature adulthood because of the crickets' many predators. To demonstrate this, break the class into two groups: predators and prey. Divide a well-marked play area (basketball, volleyball, or tennis court) into 5 sections. The two sections on either end of the court are safe sections for the crickets (prey). The three middle sections: the underground, above ground, and tree top sections contain all the predators. Crickets (prey) must try and run from one safety section to the other without being caught by the predators. The game continues until all the prey is caught. Limit the number of predators or limit the predators to only one cricket to make the game a little easier for the prey.
- ◆ Discuss what a food chain is and create a food chain that includes the ant and the cricket. Create other food chains that include other insects. What animals like to eat the insects? What do insects like to eat? Remember all food chains start with the sun; then a green plant (producer); and then an animal (consumer).
- ◆ Have students look for the body parts on the cricket that produce sound. Watch crickets in their natural habitat (cricket cage) to observe the action. Let students record the sounds.
- ◆ Divide a paper plate into sections with a black marker. Place various food items on the plate (crackers, sugar, lettuce). Set the plate outside on a nice warm day, in a low traffic shaded area where you have seen ants. Check back after an hour to see what foods the ants have taken. Which is their favorite?

## **INQUIRY AND PROCESS SKILLS**

Classifying	Arranging or distributing objects, events, or information in classes according to some method or system.
Communication	Giving oral and written explanations or graphic representations of observations.
Creating Models	Displaying information by means of graphic illustrations or other multi-sensory representations.
Formulating Hypothesis	Constructing a proposition or assumption of what is thought likely to be true based on reasoning, which serves as a tentative testable theory.
Gathering & Organizing	Collecting information about objects and events which show a specific situation.
Generalizing	Drawing general conclusions from information.
Identifying Variables	Recognizing the characteristics of objects or events which are constant or change under different conditions.
Inferring	Making a statement or conclusion based on reasoning or prior experience to explain an observation.
Interpreting Data	Analyzing information that has been collected and organized by describing apparent patterns or relationships in the information.
Making Decisions	Choosing an alternative from among several and basing the judgment on defensible reasons.
Manipulating Materials	Handling or treating materials, equipment or procedures skillfully and effectively.
Measuring	Making quantitative observations by comparing to a standard.
Observing	Becoming aware of an object or even by using any of the senses to identify properties.
Predicting	Making a forecast or estimate of what future events or conditions may occur.

## GLOSSARY

Abdomen:	the bottom section of an insect.
Ant:	a small insect usually wingless. As a group, this insect shows some social organization.
Ant farm:	a habitat for ants in which they construct their nest.
Antenna:	sensory organ occurring in pairs on the head of insects.
Booklet:	a small book.
Community:	a group whose members live in a similar location.
Cricket:	a leaping insect, the male of which makes a sharp chirping sound.
Experiment:	a procedure used to discover fact or test ideas.
Habitat:	the environment of an animal or plant.
Insect:	an animal that has a body divided into three parts, six legs, two antennae, and sometimes two pairs of wings.
Job:	anything one has to do as a task.
Life cycle:	changes from egg to adult.
Metamorphosis:	changes of form from birth or hatching to adulthood in some animals.
Omnivore:	animals that eat plants and animals.
Scavenger:	an animal that feeds on dead or decaying matter.
Social insect:	insects that live in a community.
Teamwork:	cooperative effort by a group.
Thorax:	part of the insect's body between the head and abdomen.
Worker:	a person or thing that works.

## **TEACHER REFERENCES**

Ant Homes. GEMS Publications.

Discovery School. <http://www.school.discovery.com>

Kathleen Gradusky - Insects Body Parts Song

### **Media Library**

Call the media library to order media materials and to check on new materials that are available. The number to be reached is (716) 376-8212.

### **Web Sites**

<http://www.antcam.com>

<http://www.myrmecology.org>

[http://www.education-world.com/a\\_lesson/lesson087.shtml](http://www.education-world.com/a_lesson/lesson087.shtml)

<http://www.lingolex.com/ants.htm>

<http://www.doyourownpestcontrol.com/ants.htm>