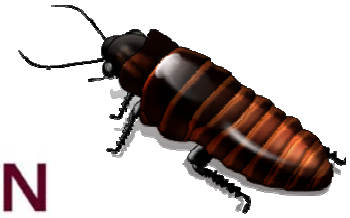
Creepy Crawly Cockroaches

Texas AgriLife Extension Service
Part of the Texas A&M System



AgriLIFE EXTENSION
Texas A&M System

Improving Lives. Improving Texas.

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Preface

Most humans feel nervous at the sight of a single cockroach. However, this group of insects is one of the most successful animals on Earth, since they have survived 80 million years before the first dinosaurs. They can live in almost all habitats but some prefer to live with humans. If they do live indoors, they can carry pathogens on their bodies and legs. These pathogens can cause food poisoning, diarrhea and wound infections. Some cockroaches, such as the American, German and Oriental cockroaches can leave an unpleasant odor on surfaces they touch. Food items with this odor are considered unfit for human consumption, since the odors usually remain after the food is cooked or processed. Also, cockroach feces and cast skins in infested buildings are important allergen triggers for asthma and respiratory problems, especially in children. For these reasons, cockroaches should be controlled when an infestation exists.

In this booklet are a variety of exercises designed to help educate your students about cockroaches and ways to prevent them from entering buildings.

TABLE OF CONTENTS

Lesson 1- What is a Cockroach?

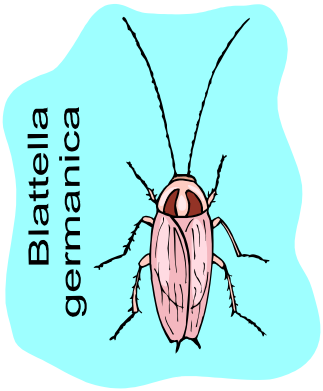
Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will get an overview about cockroach biology and habits.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn the biology of cockroaches.

TEKS:
Science: 2.1a, 2.1b, 2.2a, 2.2b, 2.3a, 2.3b, 2.4a, 2.4b, 2.6a, 2.6b, 2.8a, 2.8b, 2.9a, 2.9b
Science: 3.1a, 3.1b, 3.2a, 3.3a, 3.3b, 3.5a, 3.5b, 3.8b, 3.9a, 3.9b
Science: 4.5a, 4.6a, 4.8a, 4.8b
Science: 5.5a, 5.9a, 5.9b, 5.9c

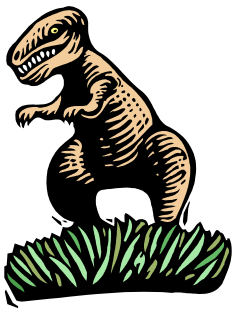
Materials:
Handouts of reading exercise
Overhead copy of reading exercise
Wrap-up questions for Lesson 1
Activity for Lesson 1



Lesson 1: What is a Cockroach?

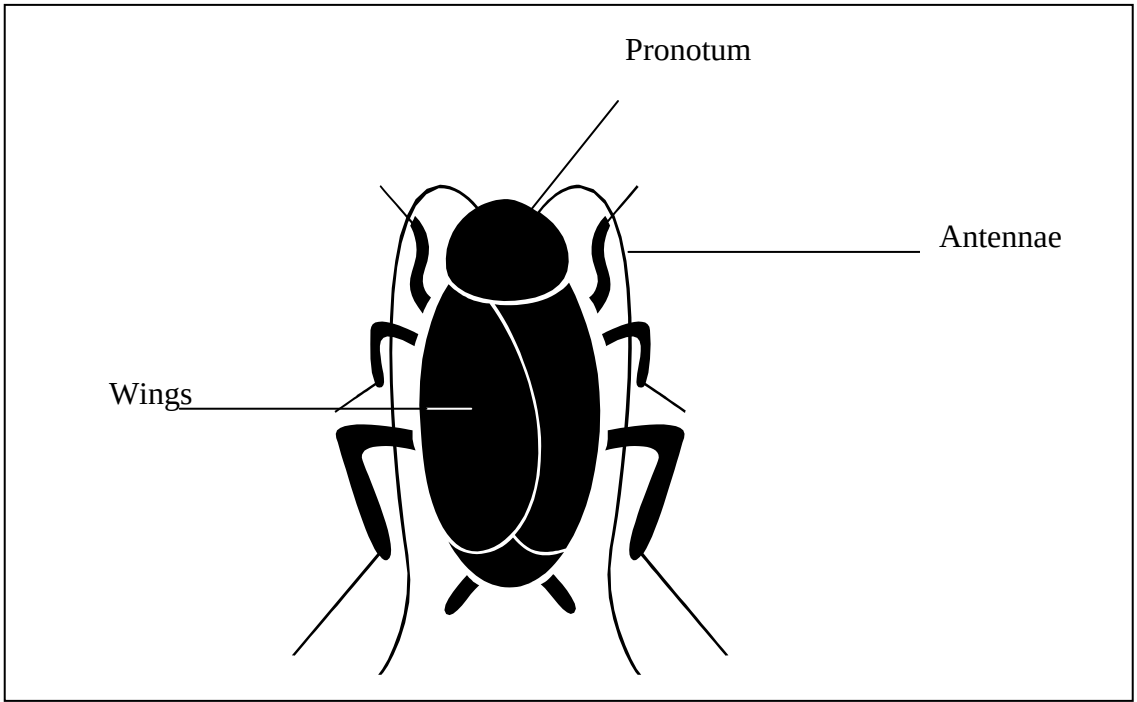
Questions to ask before reading the passage:
Have you ever seen a cockroach?
If so, where was it found?
Do you think there is more than one type of cockroach?

Reading Exercise:



Cockroaches are some of the oldest insects on Earth, which makes them very successful! Scientists believe cockroaches were around during the **Carboniferous Era**, which was 280 million years ago! This makes them 80 million years older than the very first dinosaurs! Back then, cockroaches were over a foot long. Today they are only about one inch long.

Cockroaches have flattened oval bodies and spiny running legs that help them run very fast and squeeze into tiny hiding places. Cockroach heads are protected from above by a **pronotum** or shield. On their head, long and skinny antennae are attached. Cockroaches do not have very good eyes, so they use their long antennae to help them see. Cockroaches have chewing mouthparts that are hidden under the pronotum and are **omnivores**. This means they will eat almost anything! Cockroaches can be black, dark brown, reddish brown or tan, depending on the cockroach **species**. Some cockroaches have wings, and some do not.



There are over 3,500 different types of cockroaches in the world! Most cockroaches are tropical and live outdoors, but they can live everywhere – even the North and South Poles! If cockroaches live where it is cold, they live indoors with humans.

Have you ever wondered how cockroaches get inside? They can squeeze their flat bodies into very tiny holes. Cockroaches squeeze under doors or windows, or sneak in with firewood, furniture and dry pet food. Small cockroaches can fit through cracks as thin as a dime (0.5mm), and large cockroaches can fit through cracks as thin as a quarter (1.6mm). Pregnant cockroaches need a little more space – two nickels (4.5mm)!

Class Activity:

Teachers, provide students with dimes, pennies, and quarters, or items of similar width. Instruct students to explore the classroom or school, finding small cracks and crevices where cockroaches can enter.

Discussion ideas after exploration:

How many spots can cockroaches enter this classroom?
What are some things we can do to prevent cockroaches from entering these spots?
Is it easy or hard to keep cockroaches out?
If it's hard, what are some things we can do to keep them from making our home or school their home?
What would encourage the cockroaches to come inside?

Even the cleanest homes can get cockroaches because they can squeeze through the tiniest cracks!

Most cockroaches are **nocturnal**. This means they only come out during the night. Cockroaches like to live in warm, dark, **humid** places. You find them under sinks and in kitchens and bathrooms. But you don't just find them there, since they can make a home anywhere – even inside TVs!

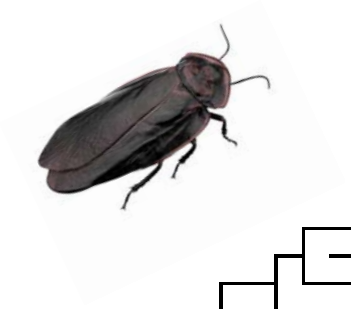
Wrap-Up Question for Lesson 1:
How old are cockroaches? They have been on Earth for 280 million years.
Where do cockroaches live? They live both indoors and outdoors.
What do cockroaches eat? They are omnivores, so they will feed on almost anything, including plants, meat, grease, starchy foods, candy, and baked goods. They will also eat leather, wallpaper glue and book binding glue, paper, clothes, coffee grinds, hair and animal waste. Some will even eat old exoskeletons, egg cases (ootheca) and each other.

Some FUN facts about cockroaches:

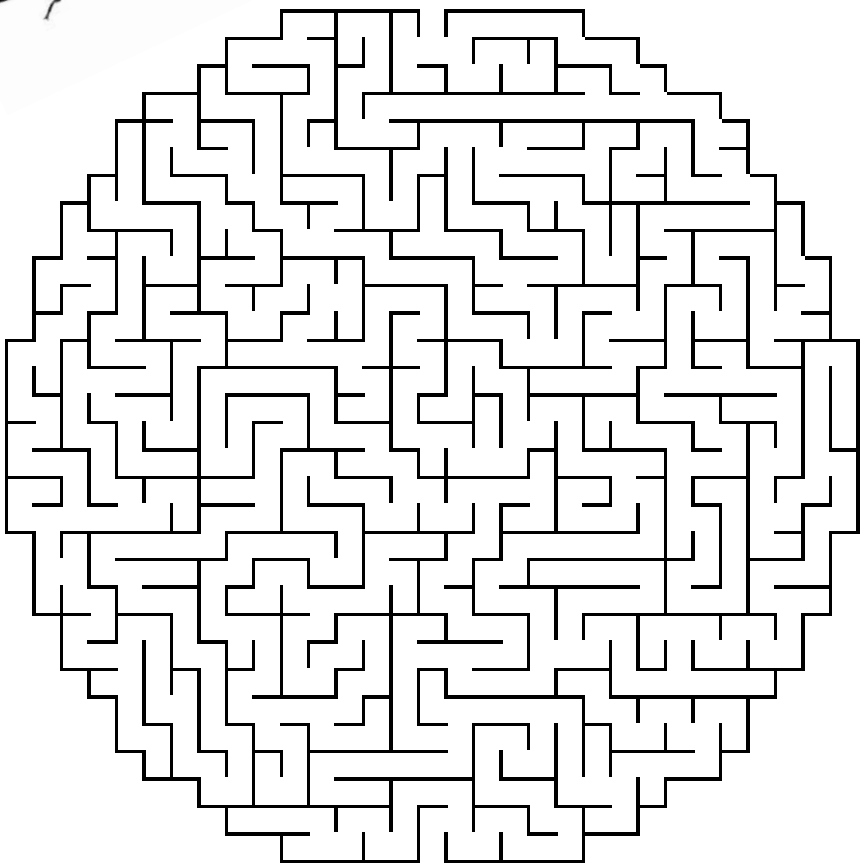
- A cockroach can survive in a cup of water for 40 minutes!
- Some cockroaches can survive for one month without food!
- Some cockroaches can survive for two weeks without water!
- A cockroach can change directions 25 times in one second!
- A cockroach does not move around very much and usually spends 75% of its time resting!
- Some cockroaches can run 3 miles in an hour!
- Male cockroaches usually weigh less than female cockroaches!
- Male cockroaches can fly and run faster than female cockroaches!
- The smallest cockroach is 1/6 inches in length and lives in the nests of leaf cutter ants and feeds on the fungus they farm!
- The world's largest roach lives in South America and is six inches long with a one-foot wingspan!
- The heaviest cockroach lives in Australia and weighs 1/8 of a pound!
- In some countries, crushed cockroaches are used to help reduce pain from stinging wounds!

Activity 1.1

Help Connie the Cockroach Find the Donut



Start



Finish

Activity 1.2
Cockroach Jeopardy

Directions: Separate students into groups or teams. Decide which team goes first, second, third, etc. At each team's turn, ask a jeopardy question. Determine how many questions will be asked to each team. Designate a student to keep track of points. When a team gets a question correct, give them one point. The team with the most points wins.
Hint for Teachers: If you need more questions, re-word the question to make true questions false and visa versa.

Jeopardy/Quiz Questions: True or False

1. Cockroaches are some of the oldest animals on earth (True)
2. Cockroaches are 1 million years old (False)
3. Cockroaches have been around longer than dinosaurs (True)
4. The first cockroaches were over a foot long (True)
5. You can find cockroaches today that are over a foot long (False)
6. Cockroaches today are about one inch long (True)
7. Cockroaches have thick, short legs (False)
8. Cockroaches heads cannot be seen from above because they are protected with a pronotum (True)
9. Cockroaches color can range from yellow to blue (False)
10. All cockroaches have wings (False)
11. There are 3,500 different types of cockroaches (True)
12. Cockroaches can live in cold places like the North and South Poles (True)
13. Cockroaches can be found all over the world (True)
14. Cockroaches can squeeze through a crack as thin as a dime (True)
15. Cockroaches like to be out during the day (False)
16. Cockroaches prefer to live in dark, humid places (True)
17. You will never find a cockroach in a bathroom or kitchen (False)
18. Cockroaches have chewing mouthparts (True)
19. Cockroaches only eat vegetables (False)
20. Cockroaches only live indoors with humans (False)
21. Cockroaches never live indoors with humans (False)
22. Cockroaches need a very large opening to get into buildings (False)
23. Cockroaches have oval, flattened bodies (True)
24. Most cockroaches live where its tropical (True)
25. Cockroaches that live where its cold, live indoors with humans (True)
26. Cockroaches can change directions 25 times in one second (True)
27. Cockroaches can survive in a cup of water for 40 minutes (True)
28. Cockroaches can live for a month without food (True)

29. Cockroaches can run 30 miles an hour (False)
30. Some countries use crushed cockroaches for painful stings (True)

Lesson 2: How Does A Cockroach Grow and Develop?

Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will learn how a cockroach grows and develops.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn about the lifecycle of a cockroach.

TEKS:
Science: 2.1a, 2.1b, 2.2a, 2.2b, 2.3a, 2.3b, 2.4a, 2.4b, 2.6a, 2.6b, 2.8a, 2.8b, 2.9a, 2.9b
Science: 3.1a, 3.1b, 3.2a, 3.3a, 3.3b, 3.5a, 3.5b, 3.8b, 3.9a, 3.9b
Science: 4.5a, 4.6a, 4.8a, 4.8b
Science: 5.5a, 5.9a, 5.9b, 5.9c

Materials:
Handouts of reading
Overhead copy of reading exercise
Wrap-up questions Lesson 2
Activity Lesson 2

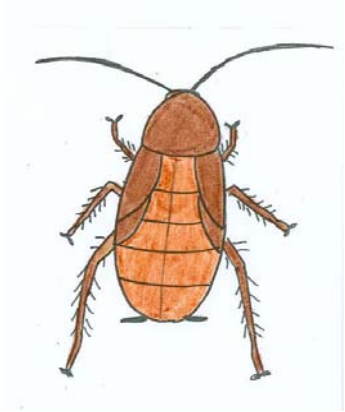
Lesson 2: How Does A Cockroach Develop?

Questions to ask before reading the passage:
How do you think cockroaches grow and develop?
Do cockroaches develop through complete or incomplete metamorphosis?
Do cockroaches live alone?

Reading Exercise:

Cockroaches develop through incomplete **metamorphosis**. Incomplete metamorphosis means that they have three life stages: egg, nymph and adult.

Adult female cockroaches do not lay individual eggs. Instead, they make small, bean-shaped egg capsules called **ootheca.** Ootheca are different colors, depending on the species of cockroach. They can be tan, dark brown or reddish-brown. Mother cockroaches put their ootheca in a safe, protected spot. Some cockroaches carry the ootheca in their abdomen until the eggs hatch.



After the eggs hatch, the cockroach **nymphs** emerge. Cockroach nymphs are smaller than the adult cockroaches and have small wings or no wings. Cockroach nymphs live in the same place as the adults and feed on the same foods. When the cockroach nymph gets too big for its **exoskeleton**, it will molt. Newly molted cockroaches are white in color. They stay white until the new exoskeleton darkens and hardens. This process can take a few hours. Cockroach nymphs will molt several times before becoming an adult male or female.

It can take 2 months to almost 3 years for a cockroach to become an adult! The length of time to become an adult depends on the species, how much of food and water is available and the temperature and humidity level inside their colony.

Cockroaches like to live near heat and water, so they can grow faster. Cockroaches are **social** insects, so they do not like to live alone. Instead, they like to live in groups and share food.

Wrap-up questions for Lesson 2:

How does a cockroach grow and develop? They develop through incomplete metamorphosis.

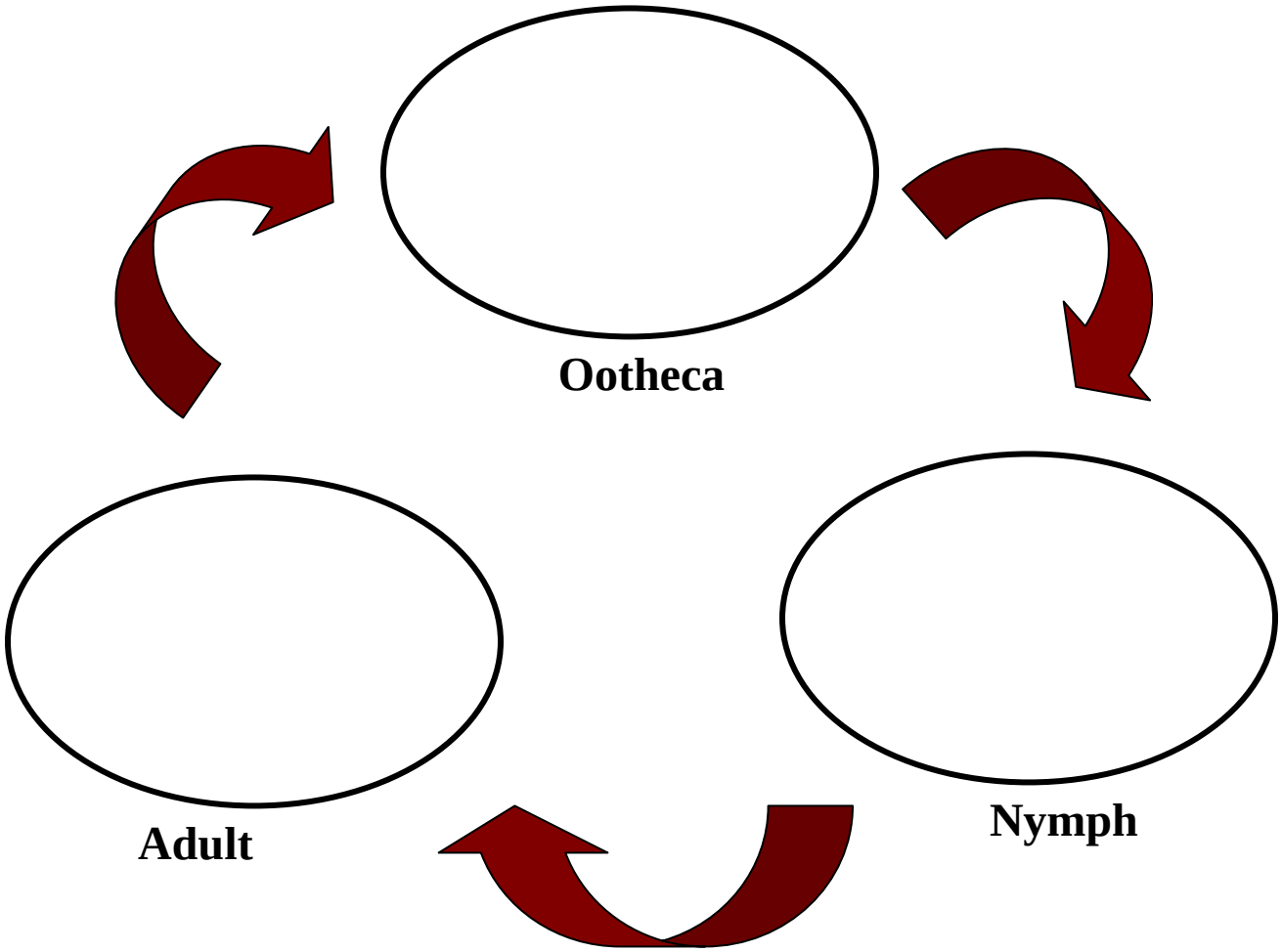
Where do cockroach nymphs live? The cockroach nymphs will live in the same place as the adults and feed on the same foods.

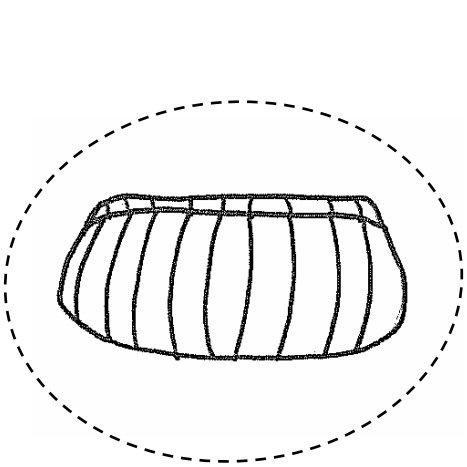
How long will it take for cockroaches to complete their lifecycle? It can take from 2 months to almost 3 years for a cockroach to become an adult, depending on the cockroach species, the amount of food and water in the area and other environmental conditions, such as humidity.

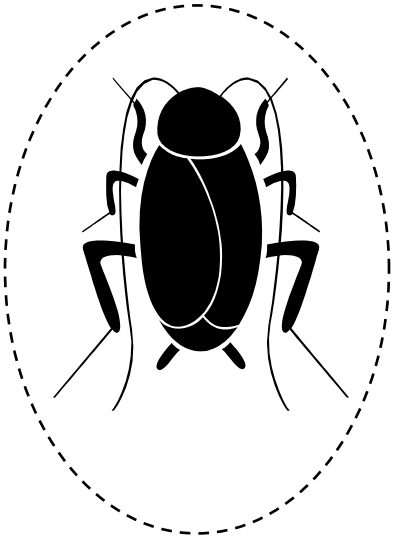
Activity 2.1

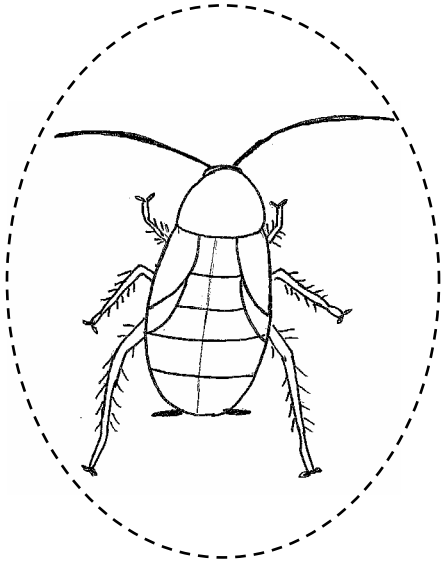
Cockroach Lifecycle Matching Game

Color and cut out the three cockroach life stages and glue them into the correct circle.









Lesson 3: Which Cockroaches Are Considered Pests?

Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will learn about which cockroaches are the main indoor pests in Texas.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn about ways to identify indoor cockroach pests.

TEKS:
Science: 2.1a, 2.1b, 2.2a, 2.2b, 2.3a, 2.3b, 2.4a, 2.4b, 2.6a, 2.6b, 2.8a, 2.8b, 2.9a, 2.9b
Science: 3.1a, 3.1b, 3.2a, 3.3a, 3.3b, 3.5a, 3.5b, 3.8b, 3.9a, 3.9b
Science: 4.5a, 4.6a, 4.8a, 4.8b
Science: 5.5a, 5.9a, 5.9b, 5.9c

Materials:
Handouts of reading exercise
Overhead copy of reading exercise
Wrap-up questions for Lesson 3
Activity 3

Lesson 3: Which Cockroaches Are Considered Pests?

Questions to ask before reading the passage:
Do you think all cockroaches live indoors?
Are all cockroaches pests?
Do all cockroaches look the same?

Reading Exercise:

There are about 3,500 species of cockroaches, but only 55 live in the United States. There may be many types of cockroaches, but only four are big pests in homes and other buildings in Texas! The other cockroach species live outdoors or do not live in Texas.

The four main cockroach pests are German cockroaches, American cockroaches, Oriental cockroaches, and Smokybrown cockroaches.

Courtesy of:
http://urbanentomology.tamu.edu

German Cockroaches: German cockroaches are ½ inch in length or smaller. They are light brown in color and have two **longitudinal** stripes on the pronotum. Both the males and females have wings that reach the end of their abdomens, but they do not fly. The German cockroach nymphs have two dark stripes running down their back.

The female German cockroach carries her ootheca until the eggs are ready to hatch. German cockroaches can complete their lifecycle from egg to adult in 40 days. In the best conditions, one female German cockroach can produce 35,000 nymphs in a year!

German Cockroach Female with ootheca
Photo by Bart Drees.

German cockroaches are indoor pests, and can not live in cold temperatures. You can find them in homes, apartments, restaurants, supermarkets, hospitals, and other buildings where food is made, served or stored.

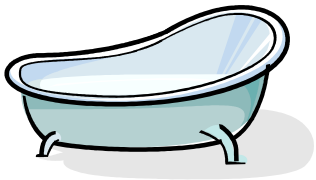
American Cockroaches: American cockroaches are actually **native** to Africa. They have spread all over the United States and are common in Texas. Some people call them waterbugs.

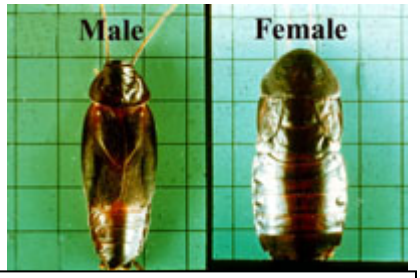
Photo by Bart Drees.

American cockroaches are the largest cockroaches in Texas! They can be 1½ to 2 inches in length! They are reddish-brown and have very long wings. These cockroaches can use their wings to fly.

It takes an American cockroach almost one year to complete their lifecycle (320 days)! One female American cockroach can produce 812 nymphs in a year!

American cockroaches like to live in places with high humidity. You can find them outdoors under the bark of trees, in leaf litter and in barns. American Cockroaches also love sewers. This is why they are found in kitchens and bathrooms in the home. They travel through the pipes and into the house.





Courtesy of:
http://urbanentomology.tamu.edu

Oriental Cockroaches: Oriental cockroaches are native to the Middle East, but they have spread to the United States and are common in Texas. Oriental cockroaches are 1 to 1¼ inches in length and dark brown in color. The adult female cockroach's abdomen is fatter than the male cockroach, so she drags the ground when she moves around. Female Oriental cockroaches have small wings that barely touch her abdomen, and males have wings that cover

almost all of his abdomen. Neither males or females can fly because they don't have full wings.

It takes 215 days for an Oriental cockroach to complete their lifecycle from egg to adult. A female can produce 196 nymphs in a year!

Oriental cockroaches usually live outdoors and like areas with high humidity. They like to live in cool, moist places, such as under porches and in plant compost. The Oriental cockroaches can enter indoors through cracks in the foundation, sewer pipes or under doors. Inside, they live under refrigerators or washing machines, since they can not climb up walls.

Smokybrown Cockroaches: Smokybrown cockroaches are native to Asia and are found in the southeastern part of the United States. Smokybrown cockroaches are 1¼ to 1½ inches in length. They are dark brown to black in color and both males and females have long wings. Their antennae are as long or longer than their bodies. It takes almost a year for Smokybrown cockroaches to complete their lifecycle from egg to adult (usually 311 days). One female can produce 306 nymphs!

Smokybrown cockroaches usually live in outdoor areas where there are many trees for shade and moisture. They can also live indoors in attics or near fireplaces where firewood is stored.

Photo by Bart Drees.

Wrap-up questions for 3:

Which cockroach is able to produce the most nymphs in a year? The German cockroach.

What is the largest pest cockroach in Texas? The American cockroach.

Which adult cockroach does not have long wings? The Oriental cockroach.

Activity 3.1: Cockroach Word Find

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

Word Bank

Abdomen
American
Cockroach
Eggcase
German
Indoors
Lifecycle
Nymph
Ootheca
Oriental
Outdoors
Pest
Smokeybrown
Species
Texas
Waterbug
Wings

Activity 3.2: Cockroach Matching Game

Use you knowledge of cockroaches from Lesson 3 to match the cockroach species to the characteristics that best describe them. There are five different clues for each cockroach. Habitat, size, lifecycle, general appearance and distribution are the five characteristic topics. You may use your booklet for reference.

General Appearance

This cockroach is about 1 inches in length. Neither males or females have full wings, so they cannot fly. The female's abdomen is much bigger than the males. It is so big that is drags on the ground when she walks!

This cockroach is very small, only about ½ inch in length. They have wings, but do not fly. The adults have two longitudinal stripes on the pronotum.

This cockroach is about 1 ½ inches in length and are dark brown to black. They have long wings and very long antennae. The antennae are as long as their body or longer.

This cockroach is very large, up to 2 inches! They are reddish brown and have long wings and can fly.

Lifecycle

This cockroach can have up to 35,000 nymphs in a year! It takes them about 40 days to go from egg to adult.

It takes this cockroach a long time to go from egg to adult – 311 days. They can lay up to 306 nymphs in a year.

It takes this cockroach 215 days to go from egg to adult. They can only lay 196 nymphs in a year.

It takes this cockroach nearly a year to complete its lifecycle. They can make 812 nymphs in a year!

Distribution	Habitats
These cockroaches are native to Asia. They are only found in the southeastern part of the United States, which includes Texas.	Outdoors, these cockroaches live where trees are found. Inside, they live in attics or where firewood is stored.
These cockroaches are native to the Middle East. They have now spread all over the United States and live in Texas.	These cockroaches love to live anywhere humans live. They are found in apartments, homes, schools, supermarkets, hospitals, and where food is served or stored.
These cockroaches are native to Africa, but they have spread all over the United States. They are very common in Texas.	These cockroaches live indoors or outdoors. Outside they live under the bark of trees or in barns. Inside, they live wherever it is humid.
These cockroaches are found wherever humans live.	These cockroaches like to live in cool and moist places. Outside you can find them under porches or in plant compost. They cannot crawl up walls, so you find them under washing machines and refrigerators indoors.

Ideas for Teachers for Activity 3.2

Teachers, promote teamwork by placing assigning students into teams. Print out sheets of paper with the four cockroach species names on th piece of paper. Make enough copies for each team. Have students cut out characteristic cards, or have them pre-printed for students ahead of time. Provide each team with a set of characteristic cards and cockroach names.

Have students work in teams to match the correct characteristics to the correct species of cockroach. Have students place the characteristics next to the correct cockroach species name. If students are having difficulty, allow them to use their booklets. The first team to complete the assignment correctly is the winner.

Additional Cooperative Learning Tip:

Assign students to "jobs".
Assign a reader – who will read the characteristic cards out loud to the group.
Assign researchers – who will search through the booklet to verify the characteristics match the cockroach species.
Assign a leader – who will make the final decision about where the characteristic card should be placed, keep the others on task, and lead discussions to resolve disputes.

Lesson 4: Ways to Control Cockroaches

Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will learn about ways to prevent cockroaches from entering indoors and methods for control if cockroaches are already indoors.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn about ways to prevent cockroach infestations.

TEKS:
Science: 2.1a, 2.1b, 2.2a, 2.2b, 2.3a, 2.3b, 2.4a, 2.4b, 2.6a, 2.6b, 2.8a, 2.8b, 2.9a, 2.9b
Science: 3.1a, 3.1b, 3.2a, 3.3a, 3.3b, 3.5a, 3.5b, 3.8b, 3.9a, 3.9b
Science: 4.5a, 4.6a, 4.8a, 4.8b
Science: 5.5a, 5.9a, 5.9b, 5.9c

Materials:
Handouts of reading exercise
Overhead copy of reading exercise
Wrap-up questions for Lesson 4
Activity 4

Lesson 4: Ways to Control Cockroaches

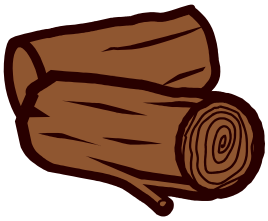
Questions to ask before reading the passage:
Where are cockroaches found most often?
Is it hard to control cockroaches?
Are cockroaches dangerous to people?
What are some reasons we might want to keep cockroaches out of the house?

Reading Exercise:

Sometimes cockroaches are able to form large colonies indoors and outdoors. These large populations of cockroaches can carry **pathogens** on their bodies and legs. Pathogens are things that can make you sick. These pathogens can cause food poisoning, diarrhea and infections. Some people are very allergic to cockroaches. They can be allergic to their feces and shed exoskeletons. Many children are very allergic to cockroaches. These are some reasons why cockroaches should be controlled.

It is much easier to prevent cockroach problems before an **infestation** happens indoors. It is very important to know where cockroaches are hiding indoors so you can clean these places. Be sure to check places that are dark hiding places for cockroaches. Check under sinks, in cabinets and in closets. Check under refrigerators or washing machines, where it is warm. Remember not to leave dirty dishes or food out on the counter overnight, clean spilled food and drinks immediately and fix leaky faucets.

When looking for cockroaches outdoors, be sure to look in dark, moist areas close to flower beds, around trees, wood piles and compost piles. These are favorite hiding places for American, Oriental and Smokybrown cockroaches.



Outdoor garbage cans should be cleaned regularly, leaves should be removed from roof gutters and firewood should not be placed close to houses. All of these places are great hiding places for cockroaches. **Seal** cracks in the foundation and outside walls and replace **weather stripping** around doors and windows. This will keep outdoor cockroaches from coming inside.

If cleaning and prevention does not control the large cockroach population, chemicals can be applied to kill them. There are many **insecticides** that are able to control cockroach populations. You should always make sure you read the label before you ever use an insecticide! Insecticides should only be used after you have tried to clean up and keep cockroaches out first!

Wrap-up questions for Lesson 4:

Why should cockroaches be controlled? They can carry pathogens and cause respiratory problems.

Where are places indoors that should be checked for cockroaches? Check under sinks, in cabinets and in closets, under refrigerators or washing machines.

Where will cockroaches be found outdoors? In dark, moist areas close flower beds, around trees, wood piles or compost piles.

Activity Idea:

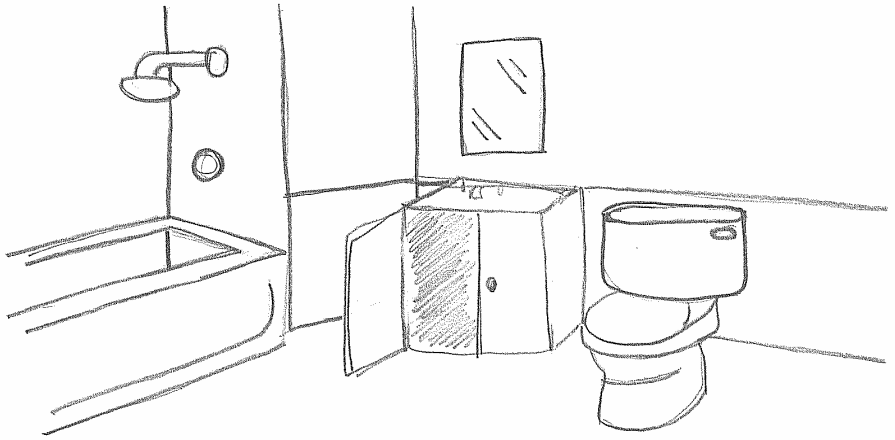
Teachers, instruct students to search around the school or their home for areas where cockroaches can come indoors. Have students draw a picture of their home from the outside or inside and circle areas where cockroaches might enter. Have students circle areas where cockroaches might be hiding or things that might attract them to come indoors. Encourage students to share this information with their parents.

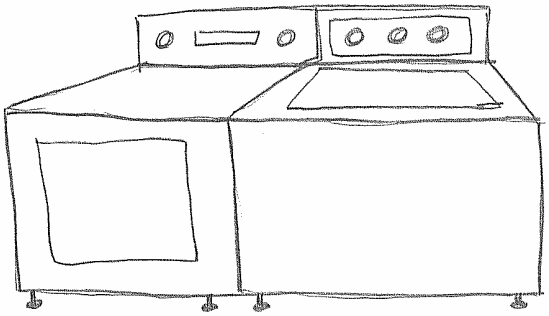
If doing this activity at school, have students get into groups and travel around the school, in the cafeteria, or in the classroom to discover areas where cockroaches may enter. Have the students share this information with the principal, IPM Coordinator, or maintenance professional.

Activity 4.1a Cockroach Hiding Place Coloring Sheet

Circle areas in these three rooms where you think cockroaches might hide.

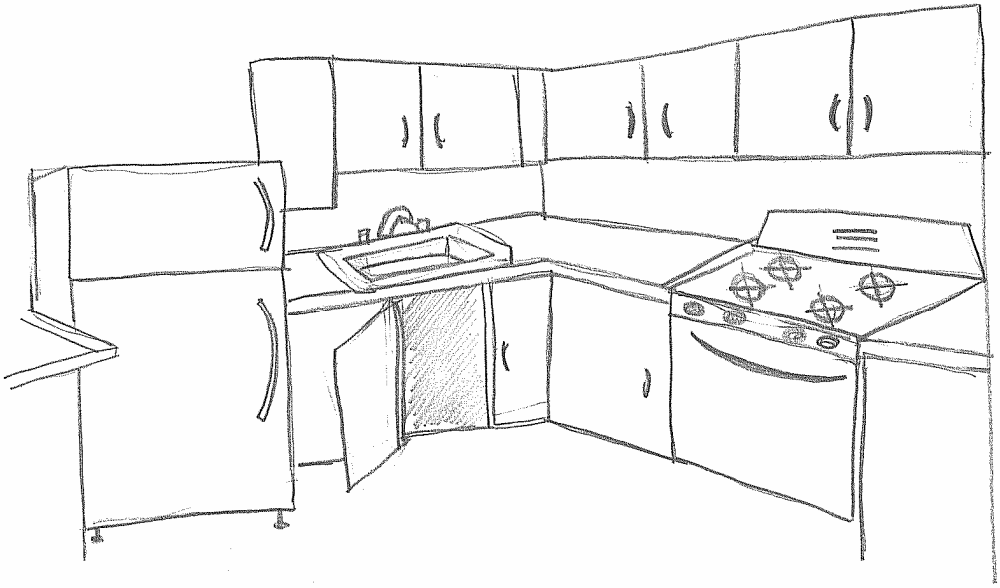
Bathroom





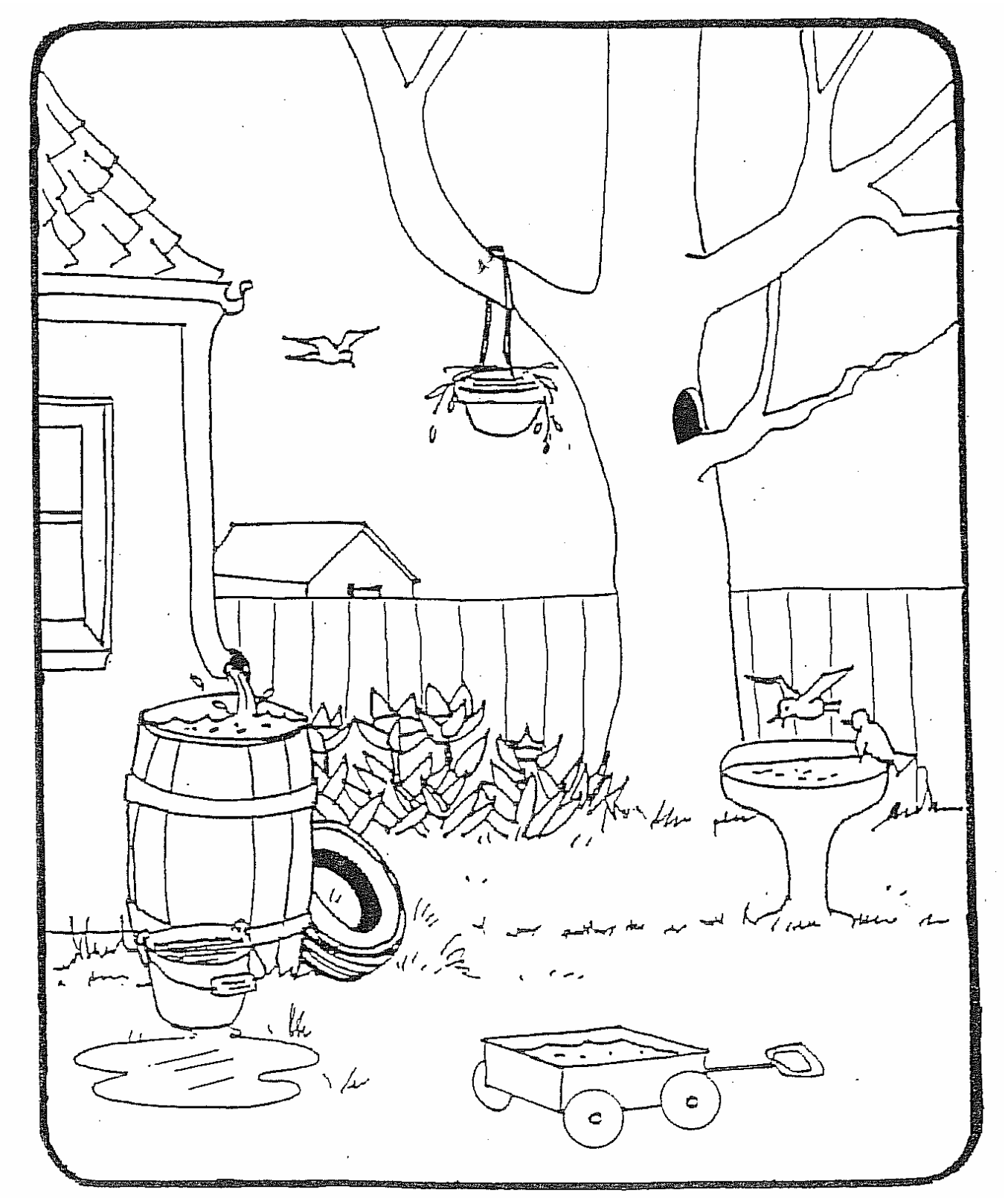
Laundry Room

Kitchen

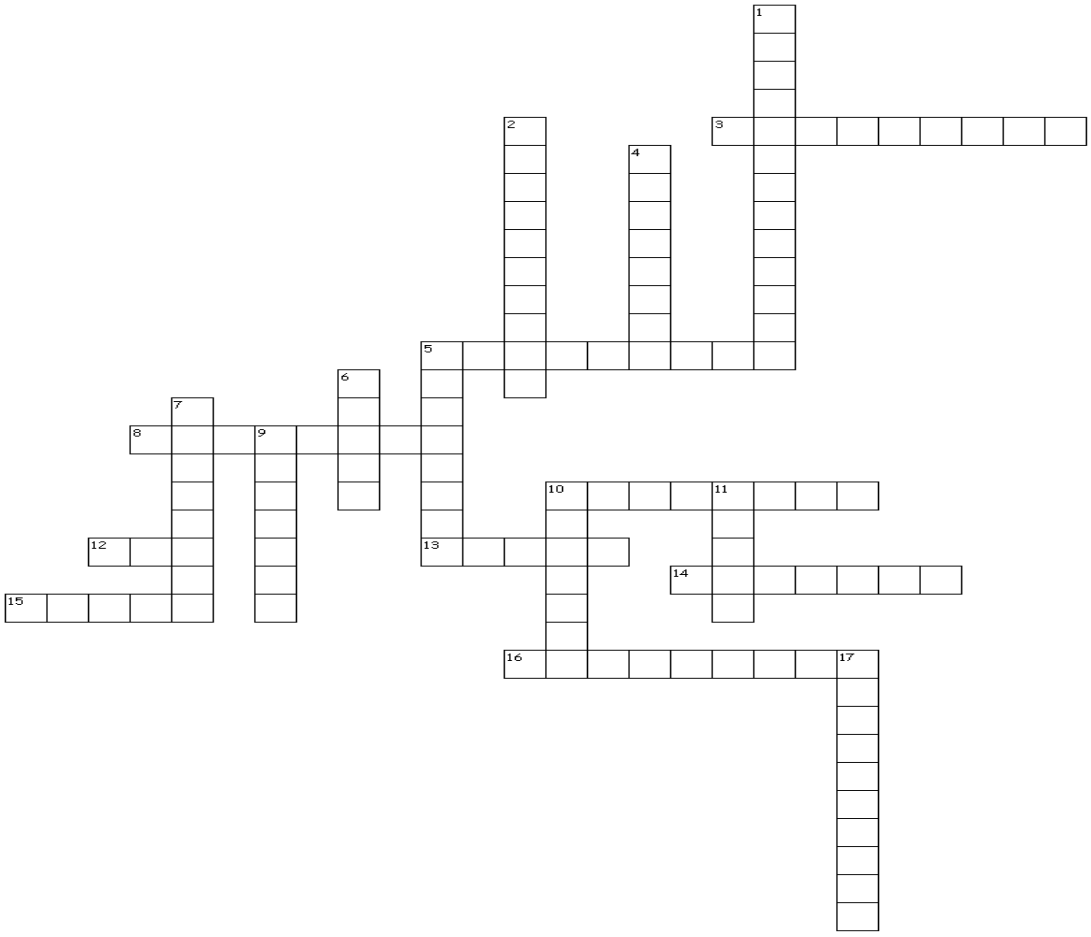


Activity 4.1b Cockroach Hiding Place Coloring Sheet

Circle areas in this backyard where you think cockroaches might hide.
Circle areas around the home where cockroaches might enter.



Activity 4.2 Wrap Up Crossword Puzzle



Across

3. Where cockroaches can be found outdoors
5. Something cockroaches carry
8. Largest cockroach in Texas
10. Type of cockroach without wings
12. Number of stripes on German pronotum
13. Length of time cockroaches can live without a head
14. Cockroaches have this type of mouthparts
15. Number of stages in a cockroach's lifecycle
16. Common word for cockroaches

Down

1. Era the cockroach first existed
2. Cockroaches undergo this type of metamorphosis
4. Can help reduce cockroach populations indoors
5. Structure that protects the cockroach's head
6. What cockroaches excrete
7. Animal that eats almost everything
9. Type of legs most cockroaches have
10. Name of cockroach egg cases
11. Time when cockroaches are active
17. Type of cockroach with long antennae

Word Bank

Waterbug
Smokybrown
Woodpiles
American
Two
Three
Omnivore
Incomplete
Ootheca
Night
Cleaning
Pronotum
Carboniferous
Running
Chewing
Month
Oriental
Feces
Pathogens

Glossary Terms

Carboniferous Era (Lesson 1)- occurring from about 354 to 290 million years ago during the late Paleozoic Era.

Exoskeleton (Lesson 2)- an external supportive covering of an animal, as an arthropod.

Favorable (Lesson 3)- pointing toward a happy outcome.

Feces (Lesson 4)- waste matter discharged from the body.

Humid (Lesson 1)- containing moisture especially to the point of being oppressive; wet.

Infestation (Lesson 4)- To inhabit or overrun in numbers or quantities large enough to be harmful, threatening.

Insecticides (Lesson 4)- an agent that destroys insects.

Longitudinal (Lesson 3)- of or relating to length or the lengthwise dimension.

Metamorphosis (Lesson 2)- a developmental change in the form or structure of an animal.

Native (Lesson 3)- grown, produced, or originating in a particular place or vicinity.

Nocturnal (Lesson 1)- active at night.

Nymph (Lesson 2) - a stage of development before becoming an adult.

Omnivores (Lesson 1)- feeding on both animal and vegetable substances.

Ootheca (Lesson 2)- a firm-walled and distinctive egg case, as of a cockroach.

Pathogen (Lesson 4)- a specific causative agent such as a bacterium or virus that causes disease.

Pronotum (Lesson 1)- the dorsal section of the prothorax of an insect.

Seal (Lesson 4)- to close or make secure against access, leakage, or passage by a fastening or coating.

Species (Lesson 1)- category of biological classification ranking immediately below the genus or subgenus, comprising related organisms or populations capable of interbreeding.

Social (Lesson 2)- living and breeding in more or less organized communities.

Weather Stripping (Lesson 4)- a strip of material to cover the joint of a door or window and the sill, casing, or threshold to prevent rain, snow, and cold air.

****Definitions adapted from Merriam-Webster's Online Dictionary: http://www.m-w.com/dictionary. ****

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