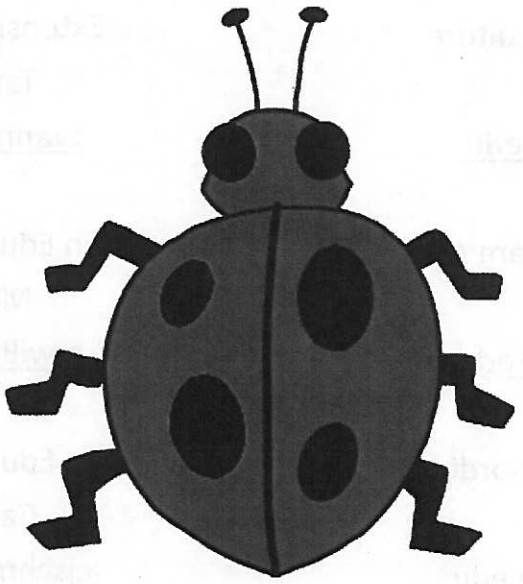
PURDUE EXTENSION | LOCAL FACES COUNTLESS CONNECTIONS

# Mini 4-H

# BUGS



## An Introduction to 4-H for Youth in Grades K, 1 & 2

Developed by Purdue Research Foundation

West Lafayette, IN 47907

Purdue Cooperative Extension Service
Vanderburgh County Office
13301 Darmstadt Road– Suite A
Evansville IN 47725-9593
Phone: 812-435-5287 or 812-867-4935
Fax: 867-4944
www.extension.purdue.edu/vanderburgh

## *County Extension Educator Staff*

Health & Human Sciences
Meagan Brothers
brotherm@purdue.edu

Urban Agriculture
Meagan Diss
mcdiss@purdue.edu

Nutrition Education Program Assistant
Tiffany Haug
thaug@purdue.edu

Community Wellness Coordinator
Lacy Wilson
wilso766@purdue.edu

Community Wellness Coordinator
Casey Williams
will1582@purdue.edu


4-H/ Youth Development
Megan Hoffherr
mkron@purdue.edu

Extension Youth Assistant
Taylor VanMeter
tvanmet@purdue.edu

Nutrition Education Program Assistant
Michele Wilhite
mwilhite@purdue.edu

Nutrition Education Program Assistant
Carolyn Schmidt
cjschmidt@purdue.edu

***Office Staff***

**Office Manager**
Susan English
englishs@purdue.edu

**Secretary**
Edwina "Winnie" McConnell
emcconne@purdue.edu

**Secretary**
Jami McGill
mcgill11@purdue.edu

# Mini 4-H Helper's Page

Welcome to the Mini 4-H Program! Mini 4-H is designed for children in grades K-2 to explore a variety of project activity areas and to interact with caring adults and other children.

Children receive this project activity manual when they enroll in Mini 4-H. This manual, and the manuals on various other topics, will provide fun, age-appropriate learning activities throughout their year(s) in Mini 4-H.

As a Mini 4-H adult helper, your job will be to guide and encourage each child through the activities. A wide range of activities is provided to allow you to choose the ones most appropriate for the children you are working with. It is strongly suggested that you do not complete the activities for them. Instead, help them, guide them, work with them, and let them do all that they possibly can. 4-H believes in allowing children to learn by doing. The Mini 4-H project activities are hands-on learning opportunities designed to provide a meaningful educational experience for youth.

Additionally, the Mini 4-H program is set up to allow children to display a project activity that is based upon information in this manual. Some children may want to exhibit at the fair. The fair is an exciting week that allows community youth to showcase their enthusiasm for learning. Children may choose to display a project activity they did themselves or one they did with a group. Other children may choose to showcase their work in other ways, such as displaying it in a special place in their home.

Mini 4-H is fun! Children will certainly enjoy it! You can have fun too, by guiding and helping as children participate in the program. Encourage and praise the children as they have fun learning and sharing with you. If you have any questions regarding Mini 4-H or other 4-H programs, please contact the Extension Office in your county.

Mini 4-H Bugs. Purdue University Cooperative Extension Service. Adopted from Purdue Research Foundation.

# Helper's Tips

The Mini 4-H program can be used with individual children, but it works best when used in a group of 2 or more children. Children working cooperatively in groups develop positive images of themselves and their ideas. Other ways adult helpers can maximize the benefits of Mini 4-H are to:

- **Work on a subject interesting to the child by encouraging children to choose the content area.** Look through this manual and choose the project activities based on the interests and skill levels of the children.
- **Relax and have fun.** Some children will want to finish their activities, others may not. There is no need to pressure children of this age to finish an activity, because the real learning takes place while they participate in the activity and interact with others. The finished product should not be the main focus. The knowledge children gain while they explore new areas and experiment with new ideas should be the primary goal.
- **Remain flexible and adapt to the changing needs of the children.** Restlessness or boredom may indicate a need to stop the activity and come back to it later.
- **Encourage the children to talk and work with each other.** Children learn best when they are encouraged to freely share their reactions and observations. You may want to ask the children about what they did during an activity, what happened, what was the most difficult, what was the easiest, and what they liked the most.

This manual contains activities for children that allow for a wide range of abilities and provide practice for developing a variety of skills.

# Mini 4-H'ers Page

Mini 4-H'ers have lots of fun! There are many activities for you to explore. You can try new things. You can share them with your friends and family.

Here are some things to know about 4-H:

**The 4-H symbol** is a four-leaf clover with an "H" in each leaf. Clover is plant that grows in fields, yards, and along roadsides. Most clovers have three leaves. Sometimes, if you look very carefully, you may get lucky and find a special clover with four leaves. A four-leaf clover is used as the symbol for 4-H to let everyone know 4-H is a special kind of group.


**The 4-H colors** are green and white. The four-leaf clover is green and the "H" in each leaf is white.

A group motto is a saying that tells people what is important to the group. **The 4-H motto** is "To make the best better." When something is better than all of the others, it is the best. Think about a time when you did your best. Maybe you threw a ball farther than you have ever thrown it before. Now, think about some ways you could do better. You may be able to throw farther by practicing for a while or by watching someone who can throw farther than you to see how they throw so far. Even if you throw the ball farther than you have ever thrown it before, there are still ways that you can do better the next time. 4-H encourages you to always try to do better, even if you are doing the best you have ever done.

Mini 4-H Bugs. Purdue University Cooperative Extension Service. Adopted from Purdue Research Foundation.

# The 4-H Pledge

A pledge is a promise you make to yourself and to the people around you. The 4-H pledge is in bold print below. Under each line of the pledge there are words telling what the pledge means.

**I pledge my Head**  **to clearer thinking.**

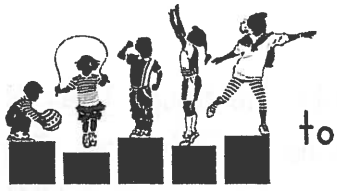
I promise to use my head to make good choices,

**my Heart**  **to greater loyalty,**

to use my heart to be a good friend,

**my Hands**  **to larger service, and**

to use my hands to do helpful things for others,

**my Health**  **to better living,**

to take care of my body and to show others how to live in a healthy way,

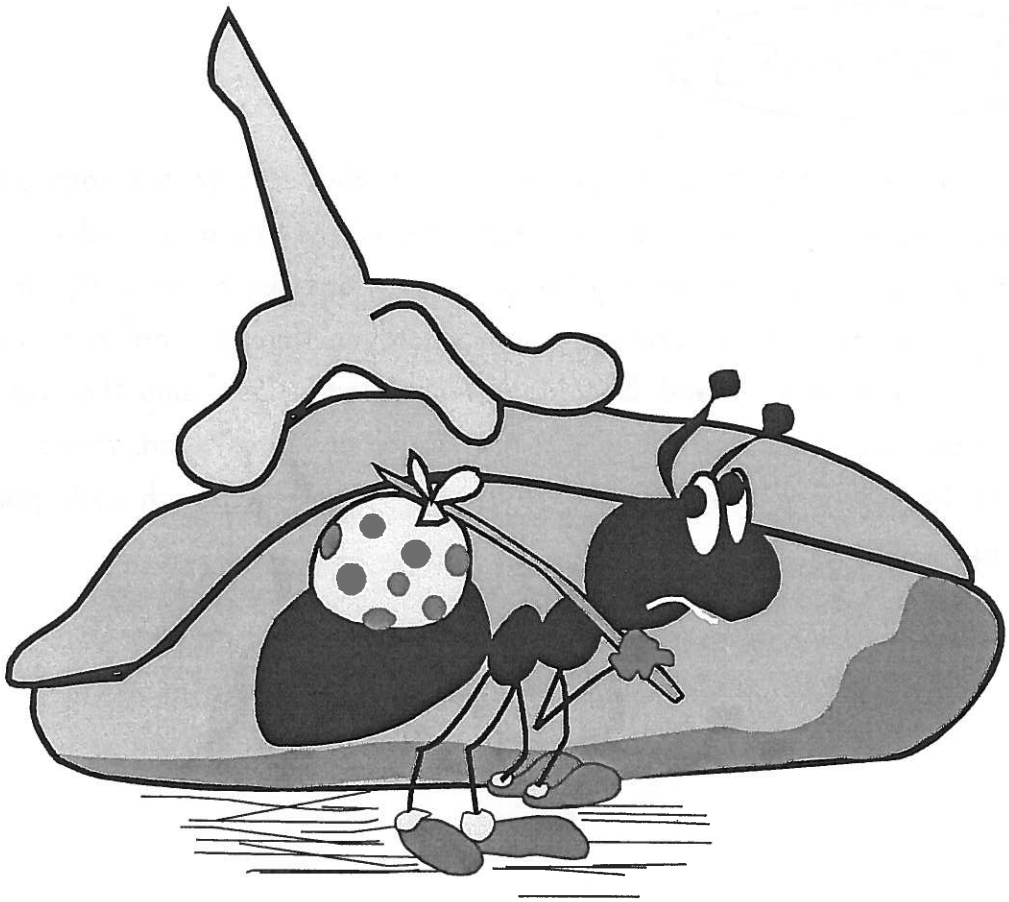
**for my club, my community,**  **my country, and my world.**

to help my group, my community, my country, and my world be happy and safe for everyone.

# Bugs! Bugs! Everywhere You Look!

Almost anywhere you look you can find bugs. Some bugs crawl on the ground, and some bugs fly in the air. Most bugs are outside, but some bugs might be in your house. There are bugs that have lots of color and are easy to see. Other bugs look like the things around them and are very hard to see. Some bugs make noises, and some bugs are so quiet you may not even know they are around.

Most bugs are **insects.** An insect has 3 body parts and 6 legs. The 3 body parts are called the **head**, **thorax**, and **abdomen.** The head is the first part. The head usually has the eyes and the feelers or **antennae.** The thorax is the middle part where all 6 legs are attached. The abdomen is the very last part. The abdomen is like your tummy. If the bug is a girl, the abdomen is the part of the insect that contains the eggs.



# Activity 1 - What Makes an Insect

Things you need:

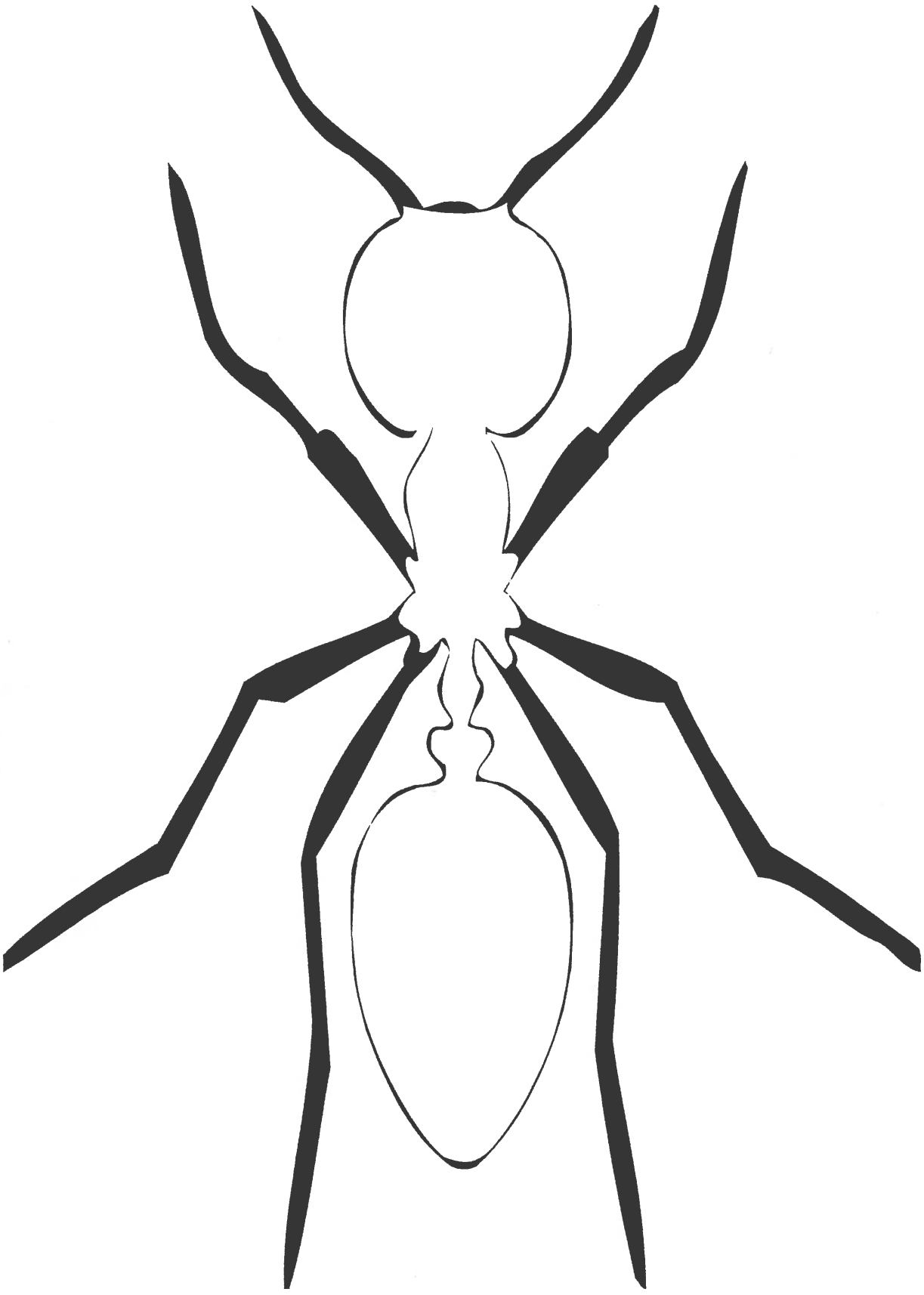
- **Insect Body Parts Activity Page**
- **Insect Body Parts Activity Page 2**
- Crayons or markers
- Scissors
- Stapler

What you do:

1. Color the insect on the **Insect Body Parts Activity Page**.
2. Cut along the dotted lines on **Insect Body Parts Activity Page 2**.
3. Lay the **Insect Body Parts Activity Page 2** on top of the **Insect Body Parts Activity Page**.
4. Staple where you see this ▲
5. Fold back each flap, one at a time, to make a door so you can see the part of the insect the word on the flap is naming.


1. Encourage children to compare their own body parts to the body parts of an insect. Compare the number of legs, where legs are attached, etc.
2. Encourage children to scurry like a spider, float like a butterfly, and leap like a grasshopper. How many more ways can you think of that bugs move?
3. Using the tune of "Head, Shoulders, Knees, and Toes" sing the words "Head, thorax, abdomen, legs. Head, thorax, abdomen, legs. Head, thorax, abdomen, legs. Insects are our friends." Be sure to point to each body part as you sing it.

# Insect Body Parts Activity Page



Fold Here

Fold Here

Fold Here

# Head

# Thorax

# Abdomen

# Activity 2 - Spiders Are Not Insects

What about spiders? Are spiders insects? In Activity 1 we learned that insects have 6 legs and 3 body parts. Spiders are not insects because they have 8 legs and 2 body parts. The first body part of an insect is the head and the second body part is the thorax. The head of an insect and the thorax of an insect are two different body parts. But the head and the thorax of a spider are made together and are only one body part. This body part is called the **cephalothorax** (SEF ah low thor ax). The legs of a spider are attached at the cephalothorax. The abdomen of the spider has **spinnerets** and the part that lays the eggs. The spinnerets have tubes in them. Spiders make webs from the silky fiber that comes out of the spinnerets.

Things you need:

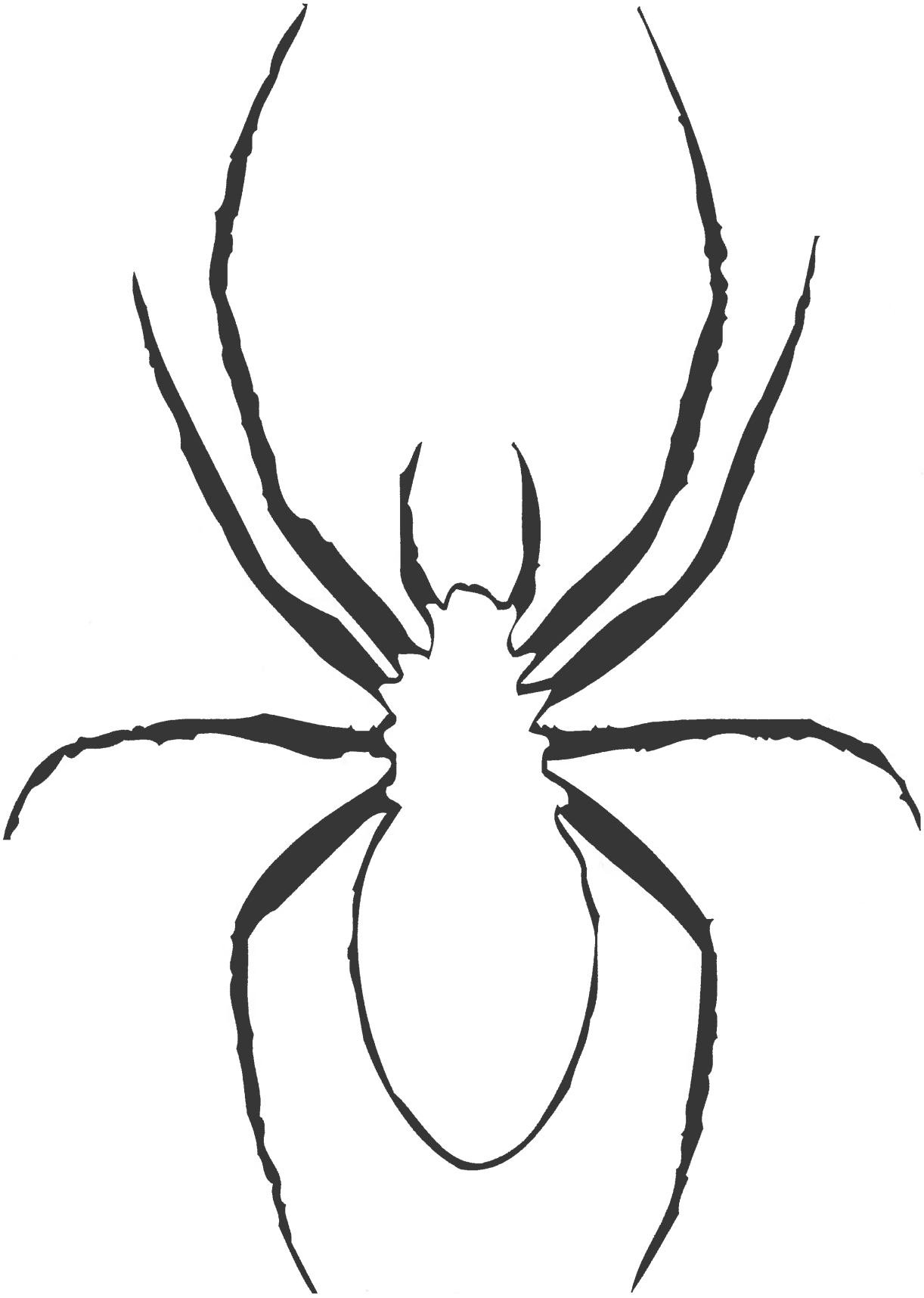
- **Spider Parts Activity Page**
- **Spider Parts Activity Page 2**
- Crayons or markers
- Scissors
- Stapler

What you do:

1. Color the spider on the Spider Parts Activity Page.
2. Cut along the dotted lines on the **Spider Parts Activity Page 2**.
3. Lay the **Spider Parts Activity Page 2** on top of the **Spider Parts Activity Page**. Staple where you see this ▲
4. Fold back each flap, one at a time, to make a door so you can see the part of the spider the word on the flap is naming.


1. Create math problems using insects and spiders. For example ask how many legs there would be if you caught 3 insects and 1 spider. Answer is 26 legs. Insect legs equal 18 (3 times 6) plus 8 spider legs.

# Spider Parts Activity Page



Fold Here

Fold Here

Fold Here

# Cephalothorax

# Abdomen

# Activity 3 - Insect or Spider Game

Things you need:

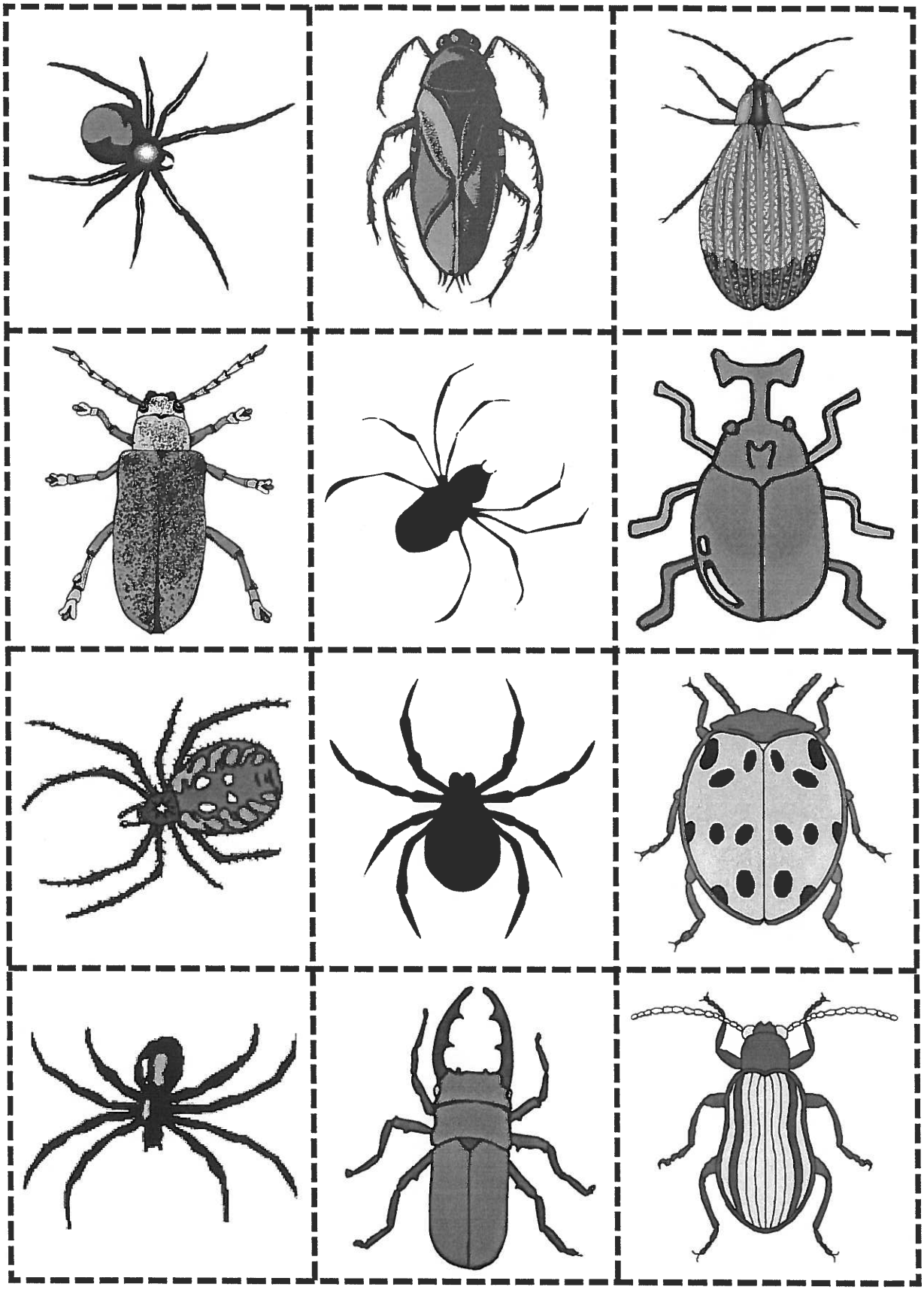
- **Insect or Spider Activity Page**
- **Insect or Spider Activity Page 2**
- **Insect or Spider Graph**
- Scissors
- Paper lunch bag
- Crayons or markers

What you do:

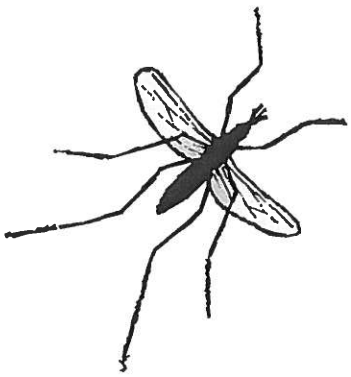
1. Cut out the squares on the dotted lines to make cards.
2. Place the cards in a paper lunch bag and shake to mix them up.
3. Draw out one of the cards. If the card shows a picture of an insect or if the words describe an insect, color in the bottom square of the graph right above the insect. If the card shows a picture of a spider or if the words describe a spider, color in the bottom square of the graph right above the spider.
4. Choose again and color in the square that shows what you picked. Choose a total of eight times. Did you choose more insect cards or more spider cards? (This game can be played with partners and in a group of 3. Each child takes a turn drawing cards until one person has either filled up one side of the graph or until the group has run out of cards.)

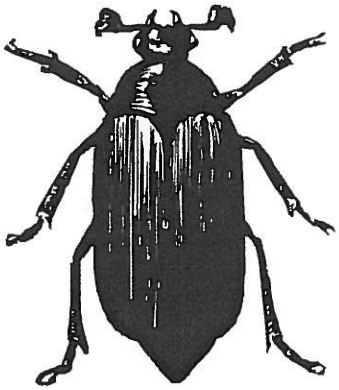

1. A memory game can be played with the cards. Glue the cards onto the same color of construction paper so you can not see through the backs. Mix up all the cards and lay them face down in rows. Turn over any 2 cards. If both cards are insects or words about insects, keep them and the next person takes their turn. If both cards are spiders or words about spiders, you keep them and the next person takes their turn. If both cards do not refer to the same thing, (either an insect or a spider) you must put the cards back and the next person takes their turn. The game ends when all the cards are matched.

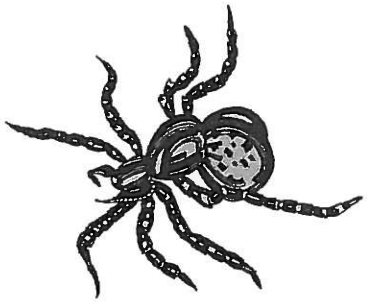
# Insect or Spider Activity Page

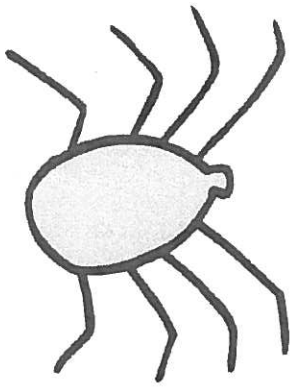


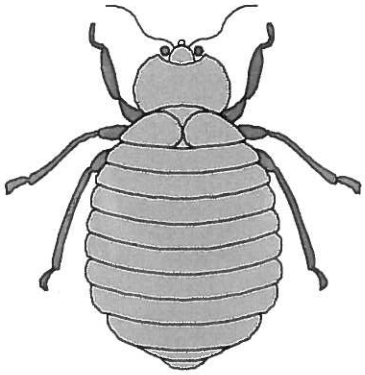
# Insect or Spider Activity Page 2





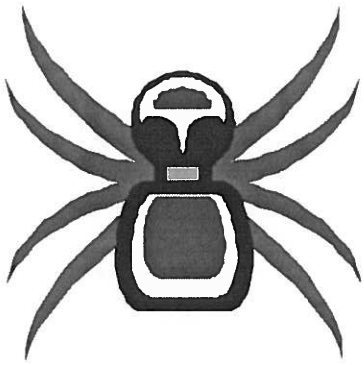




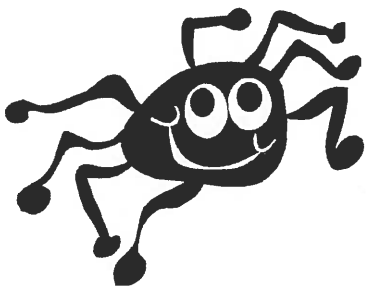


6 Legs

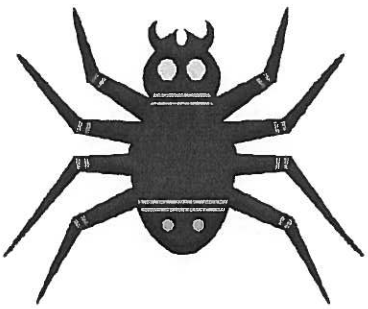
8 Legs



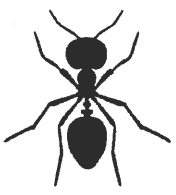
3 Body Parts



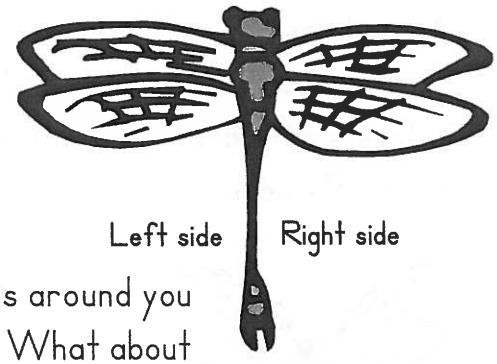
2 Body Parts



# Insect or Spider Graph

| | |
|---|---|
| 8 | 8 |
| 7 | 7 |
| 6 | 6 |
| 5 | 5 |
| 4 | 4 |
| 3 | 3 |
| 2 | 2 |
| 1 | 1 |
|  Insect | Spider  |

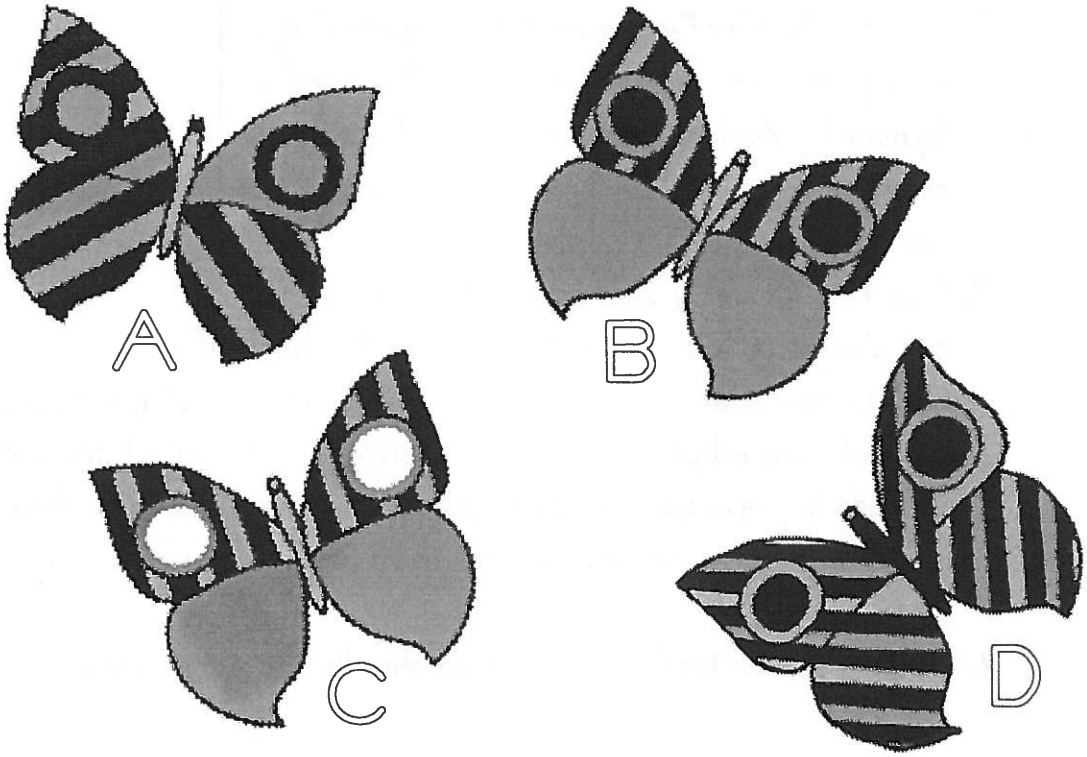
# Activity 4 - Both Sides Are the Same




Have you ever looked closely at a bug? Most bugs are the same on both sides. When a bug has 2 wings on the right side, it usually has two wings on the left side, too. Things that are the same on both sides are **symmetrical**. Take a minute to look around. Can you find things around you that are symmetrical? Are animals symmetrical? What about you and your friends?

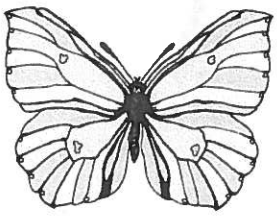
Why do you think bugs are symmetrical? What might happen if a bug had 3 long legs on one side and 3 short legs on the other side? Get an adult to help you find out. First, make one small wheel and one large wheel out of cardboard. Use a pencil or straw as an axle to connect the 2 wheels. What happens when you try to roll the wheels? What might happen if a bug had 1 wing on one side and no wings on the other side? (*Hint: Take one of the wheels off and try to roll only one wheel and an axle.)*

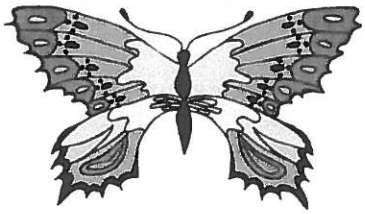
Which butterflies below are symmetrical? (*Answer on page 30*)



# Activity 5 - Make a Butterfly

Most bugs have the same color and design on the left side and on the right side. If a bug has a blue stripe and a red dot on the left side, the bug will usually have a blue stripe and a red dot on the right side, too. Make your own symmetrical butterfly below.

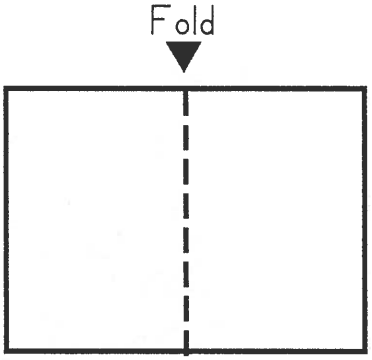




Things you need:

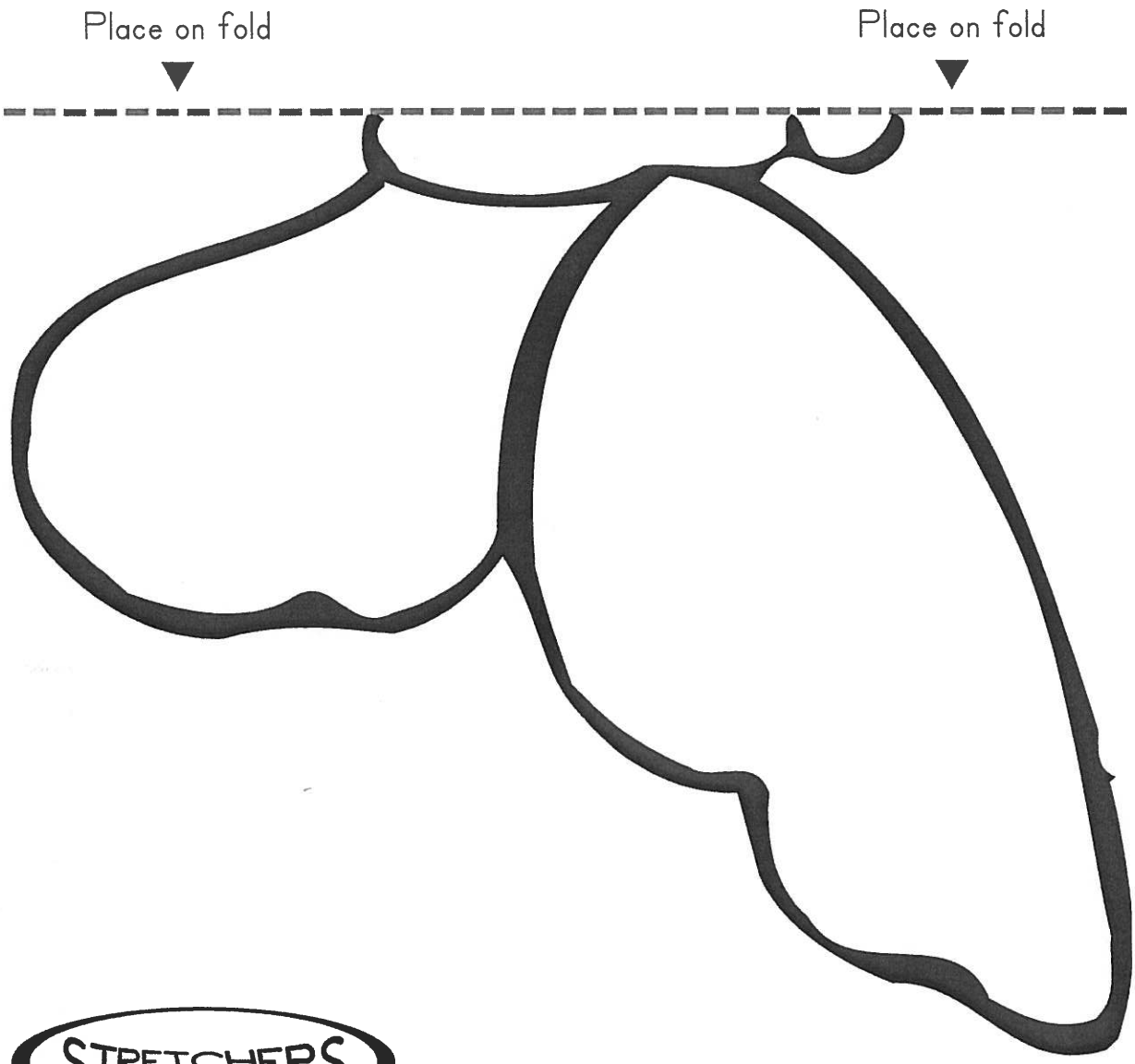
- **Butterfly Symmetry Activity Page**
- Scissors
- Chenille stems
- 8 1/2 x 11" construction paper
- Several colors of paint
- Scotch tape

What you do:




1. Fold construction paper in half like a book.
2. Cut the **Butterfly Symmetry Activity Page** along dotted line. Place the **Butterfly Symmetry Activity Page** on top of the folded construction paper. Be sure the cut edge is on the fold.
3. Cut the butterfly shape out. Be sure not to cut along the fold where the body of the butterfly is.
4. Unfold the paper. You should have a butterfly shape. Carefully add dots of colored paint to make a design on one wing of the butterfly.
5. Carefully, press both wings together. What happened to the design you made with paint on one of the butterfly's wings? Is your butterfly symmetrical?
6. Finish your butterfly by taping on chenille stem antennas.

# Butterfly Symmetry Activity Page

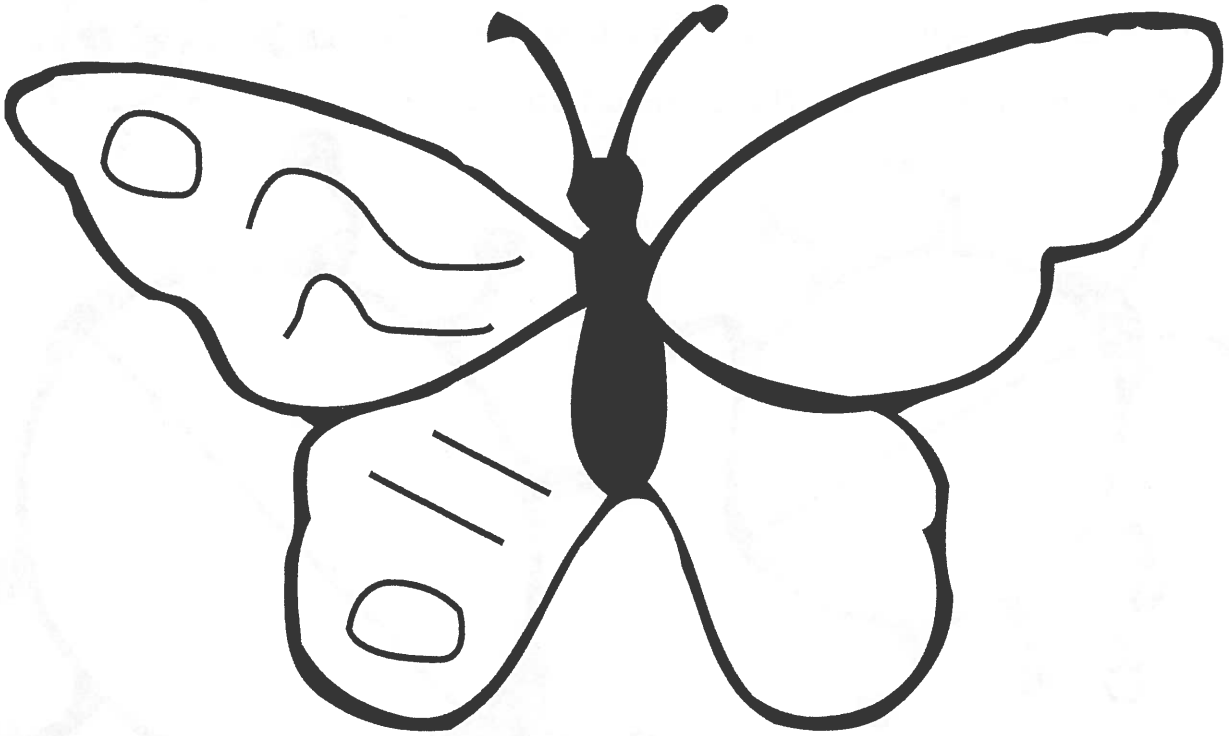


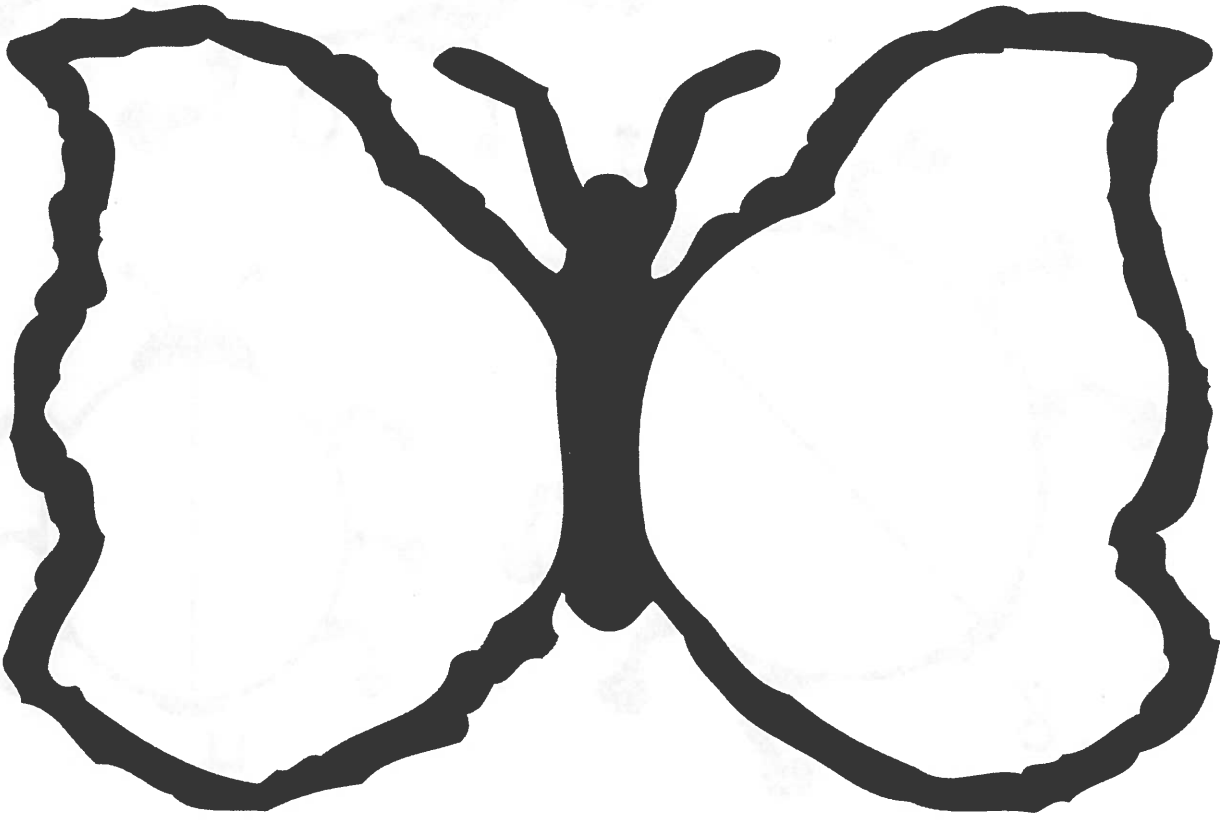

STRETCHERS

1. Make a variety of butterflies. Use yarn to connect them to a wire hanger to create a mobile of butterflies.
2. Encourage children to create a diorama in a shoebox for their bug. Use things from nature to make it realistic.

# Activity 6 - Make the top butterfly the same on both sides.

Use the bottom butterfly to create your own.

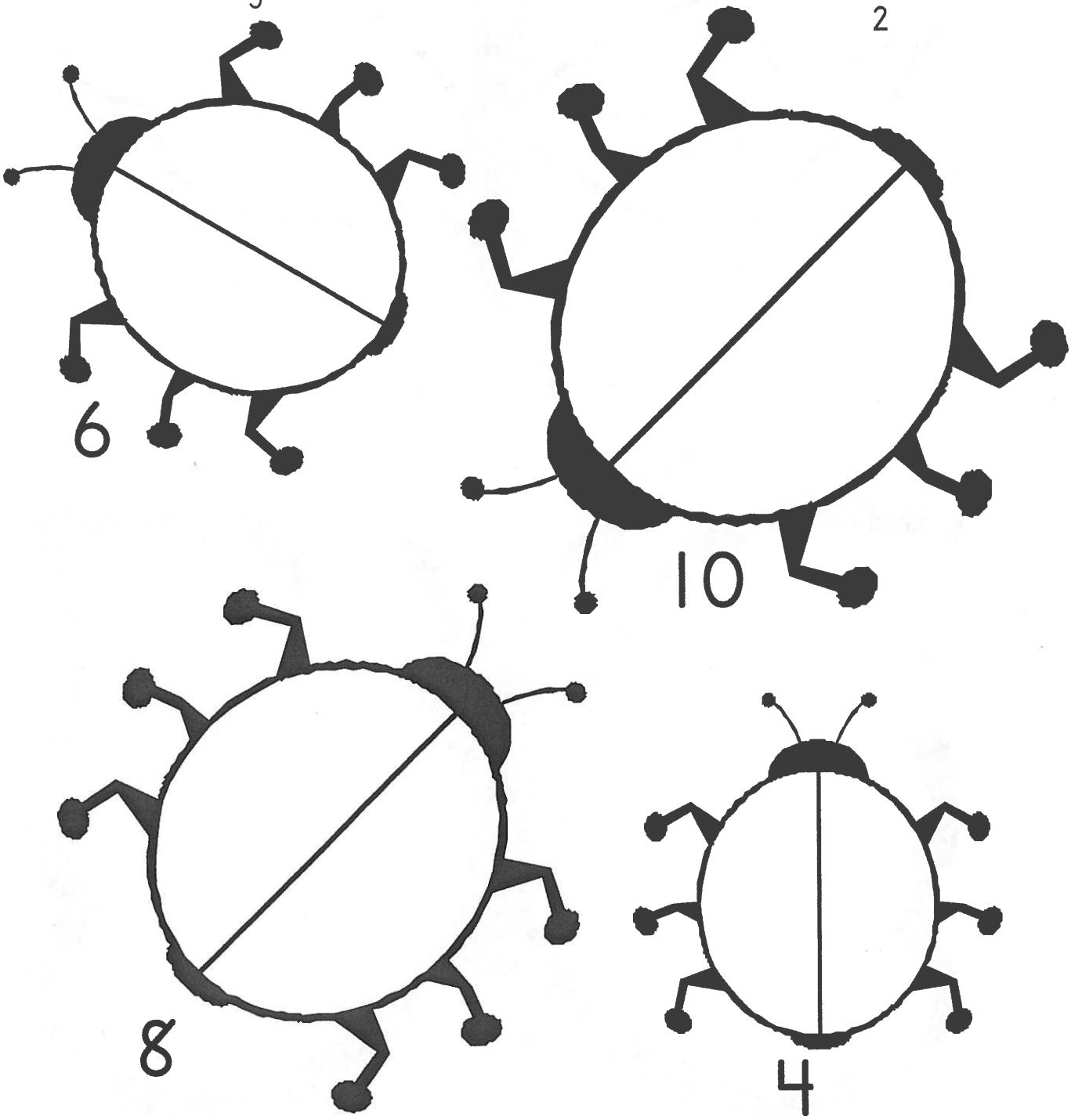




# Activity 7 - Spot the Ladybug

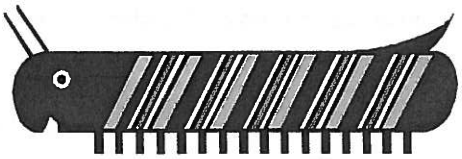
Look for a number by each ladybug. Put that number of spots on each ladybug like this → Remember, bugs are the same on both sides.

2



# Activity 8 - Make a Shape Bug

Bugs can be many different shapes and sizes. Bugs can be almost any color or pattern. Take a walk outside and look at all the different kinds of bugs. What kind of bug would you make if you could create your own special bug? Would it be large or small? Would it be brightly colored or would it be hard to see in a pile of leaves on the ground?



Things you need:

- Glue
- Scissors
- Pencil
- Buttons, chenille stems, sequins, glitter (whatever you need to decorate your bug)
- Crayons or markers
- White or colored paper
- Objects with a variety of shapes to trace (optional)

What you do:

1. Think about a bug you would like to make. Think about the shapes you will need to make your bug. Draw the shapes you will need on the white or colored paper. *Children with lesser skill may need to trace around objects to get the shapes they need.* Some children may choose to decorate an object like a comb or tongue depressor as a bug.
2. Cut out the shapes you need to make your bug.
3. Glue the shapes together to make your bug.
4. Color and decorate your bug using all of the things you collected.

STRETCHERS

1. Encourage children to make a bug collection with the bugs they made. Let children glue the bugs they made in the lid of a shoebox or on a piece of cardboard and label each bug with a name they choose.
2. Invite older children to write a story about their special bug. Have them include where the bug lives, what it eats, and how it protects itself from its enemies.

# Activity 9 - Bug Hide and Seek

Have you ever wondered how bugs stay safe from their enemies? One way bugs stay safe is to look like the things around them. This is called **camouflage.** This picture shows an insect called a **walking stick.** Can you guess how this bug got its name? This bug stays safe by looking like a twig or a stick. The walking stick stands very still so that when birds or other animals are looking for a meal they think the walking stick is part of a tree and not something good to eat.

Things you need:

- **Bug Hide and Seek Activity Page**
- Markers or crayons
- Scissors
- White paper

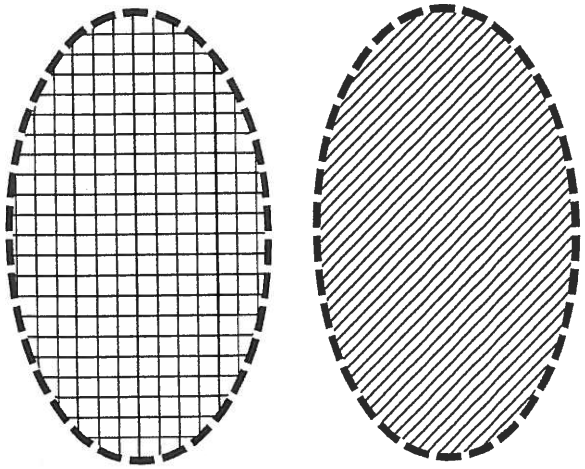
What you do:

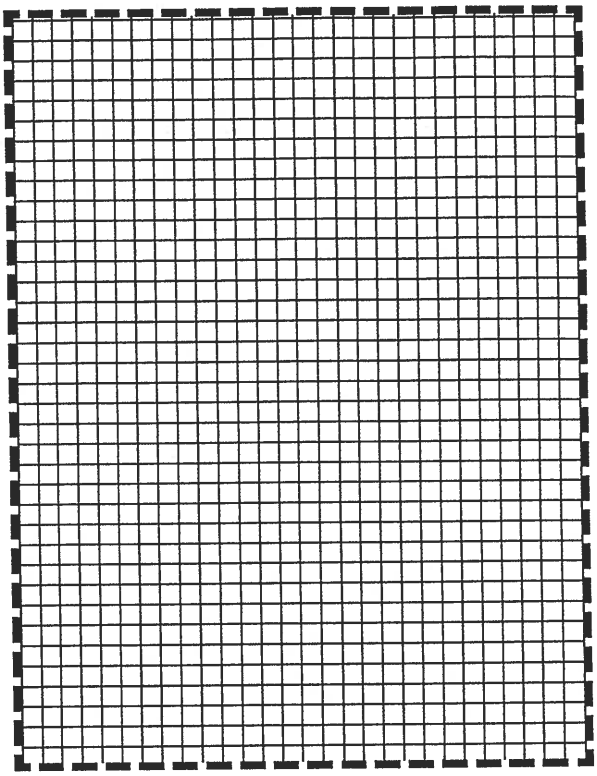
1. Cut along the dotted lines. The ovals are the bugs, and the squares are the hiding places.
2. Lay each bug on the hiding places one by one. Which hiding place should each bug use to stay safe from enemies? Why?
3. Trace the shape of one of the bugs and one of the hiding places onto a piece of white paper to make your own bug and hiding place. Use crayons or markers to create your own camouflage. *Remember the bug and the hiding place should match to keep the bug safe.*

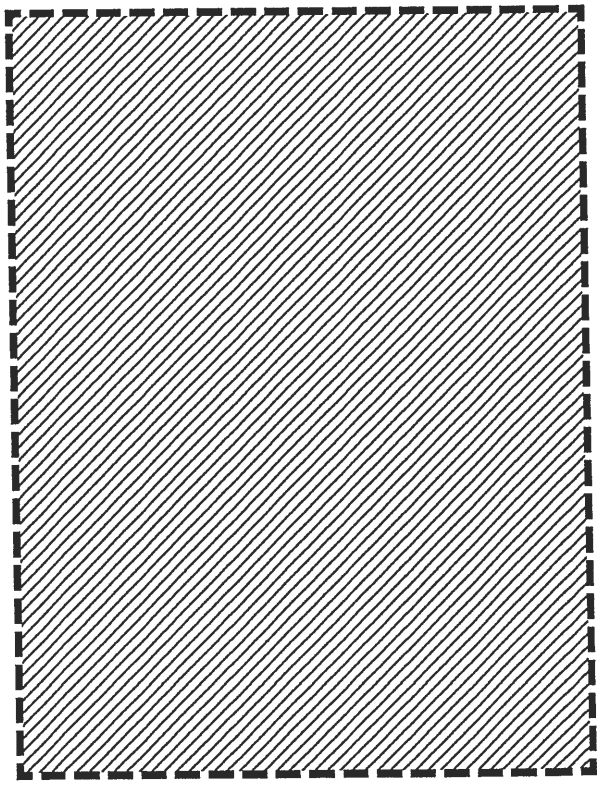
## STRETCHERS

1. Encourage children to make bugs out of newspaper, wallpaper, or colored construction paper. Take turns hiding the bugs in plain sight. Remember the bugs are hardest to see when they hide on something that is the same color as they are or on something that looks like them.

## Bug Hide and Seek Activity Page



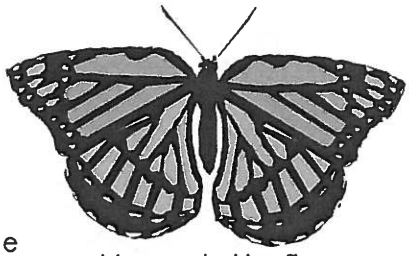




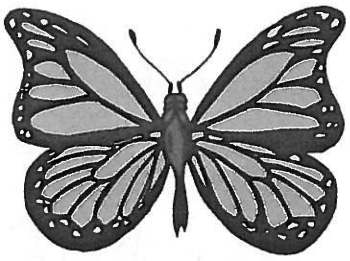

2. Use wallpaper or gift wrap scraps to make a camouflage game. Make 6 squares, each from a different paper design, and glue them onto index cards. These are the hiding places for the bugs. Make 6 ovals out of the scraps, one to match each square, and glue them onto index cards. These are the bugs. Mix up the cards and lay them all face down. Invite one child to choose 2 cards. If the child chooses a bug and a hiding place that match, the bug is safe, the child lays the pair aside, and the next child takes a turn. If the child chooses 2 bugs, 2 hiding places, or a bug and a hiding place that do not match, the cards are put back and the next child takes a turn. Play continues until all the bugs are safe.

# Activity 10 - Copycat Bugs

Some bugs stay safe by looking like bugs that taste bad. One insect that stays safe this way is a butterfly called a viceroy. A viceroy butterfly looks almost the same as a monarch butterfly. Both of them have very bright orange and black wings, but the monarch tastes bad.



Viceroy butterfly



Monarch butterfly

The caterpillars of monarch butterflies feed on milkweed, and this causes the grown-up monarch to have milkweed poison in them. If a bird eats a monarch butterfly, the bird will get sick and throw up. After that, the bird will remember the bright orange and black colors and will not eat any butterfly with those colors. This keeps the viceroy butterfly safe, because birds think the viceroy will make them sick, too.

Things you need:

- **Copycat Bug Activity Page**
- Crayons

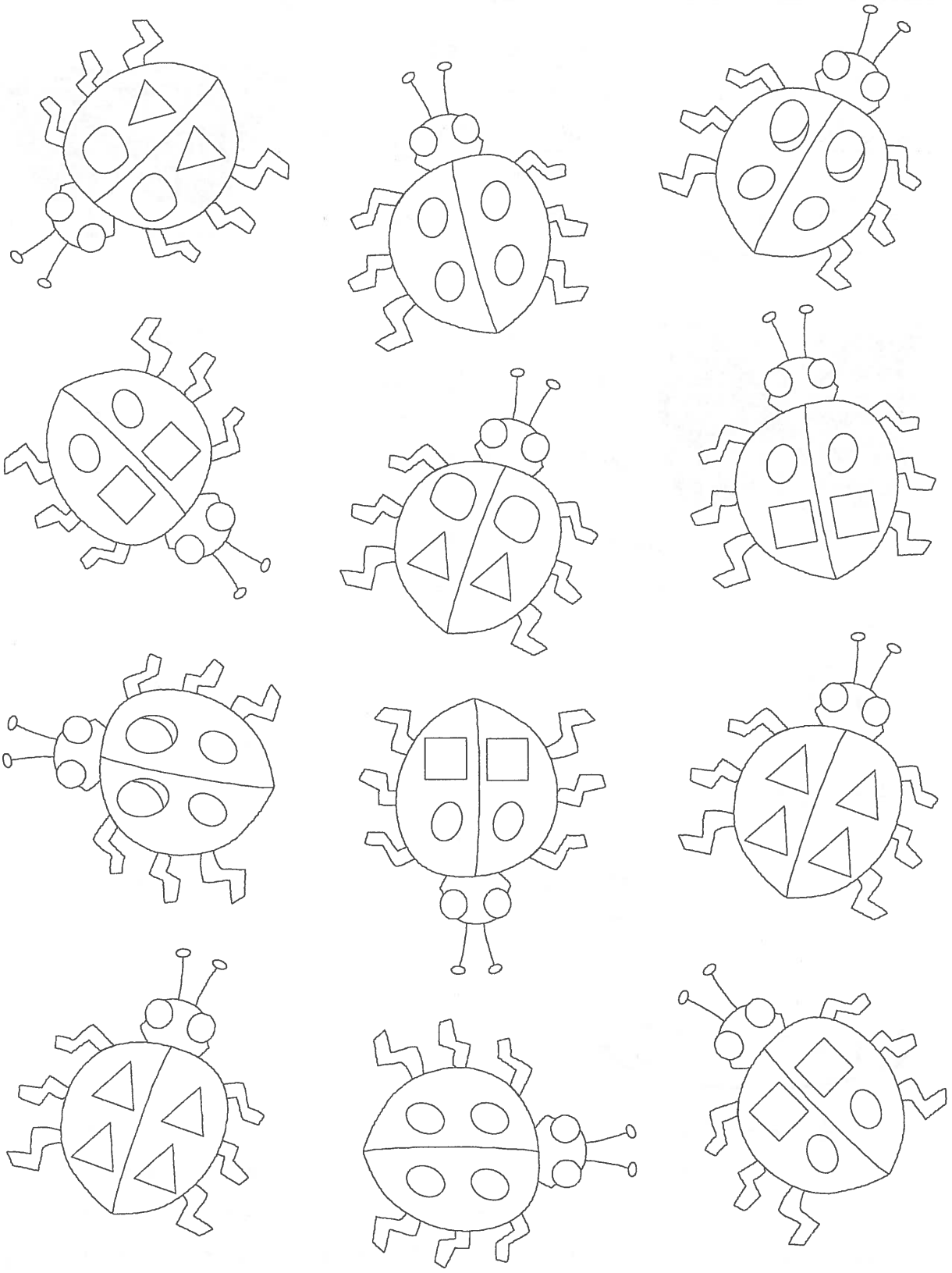
What you do:

1. Look carefully at all the bugs on the **Copycat Bug Activity Page**. Find the match for each bug and circle the matching bugs with the same color crayon. Hint: *Each bug has only one copycat bug that looks exactly like it.*

## STRETCHERS

1. Challenge children to make a "copycat" bug. Invite children to work in pairs. Give each child two oval pieces of construction paper to use as bugs. Have each child draw a unique design on one of their "bugs." Let the children exchange designed bugs with their partner. Have children make a "copycat" bug by copying onto their blank bug the same design their partner drew.

# Copycat Bug Activity Page



# Activity 11 - Where Are Bugs in Winter?

Bugs are almost everywhere you look in the spring, summer, and fall. But when it gets cold outside, bugs are not easy to find. Have you ever wondered what happens to bugs in the winter? Not all bugs do the same thing.

Some bugs, like crickets, lay eggs in the ground before it gets really cold outside. After the crickets lay their eggs, they die. The eggs hatch when it gets warm again in the spring.

Other bugs, like ladybugs, **hibernate** or sleep through the winter. They find a warm spot in a hole in a tree or maybe under your house and sleep during all the cold days. When it starts getting warm again, they wake up.

Ants live all winter deep in their tunnels under the ground. Honeybees spend the winter snuggled close to each other in their hive.

Some bugs, like monarch butterflies, **migrate** or travel to a different part of the world. When the weather starts to get cool, they fly to places where the air is warm. The butterflies stay in the warm place for several weeks. When spring comes back to the place they left, the butterflies fly home.

Things you need:

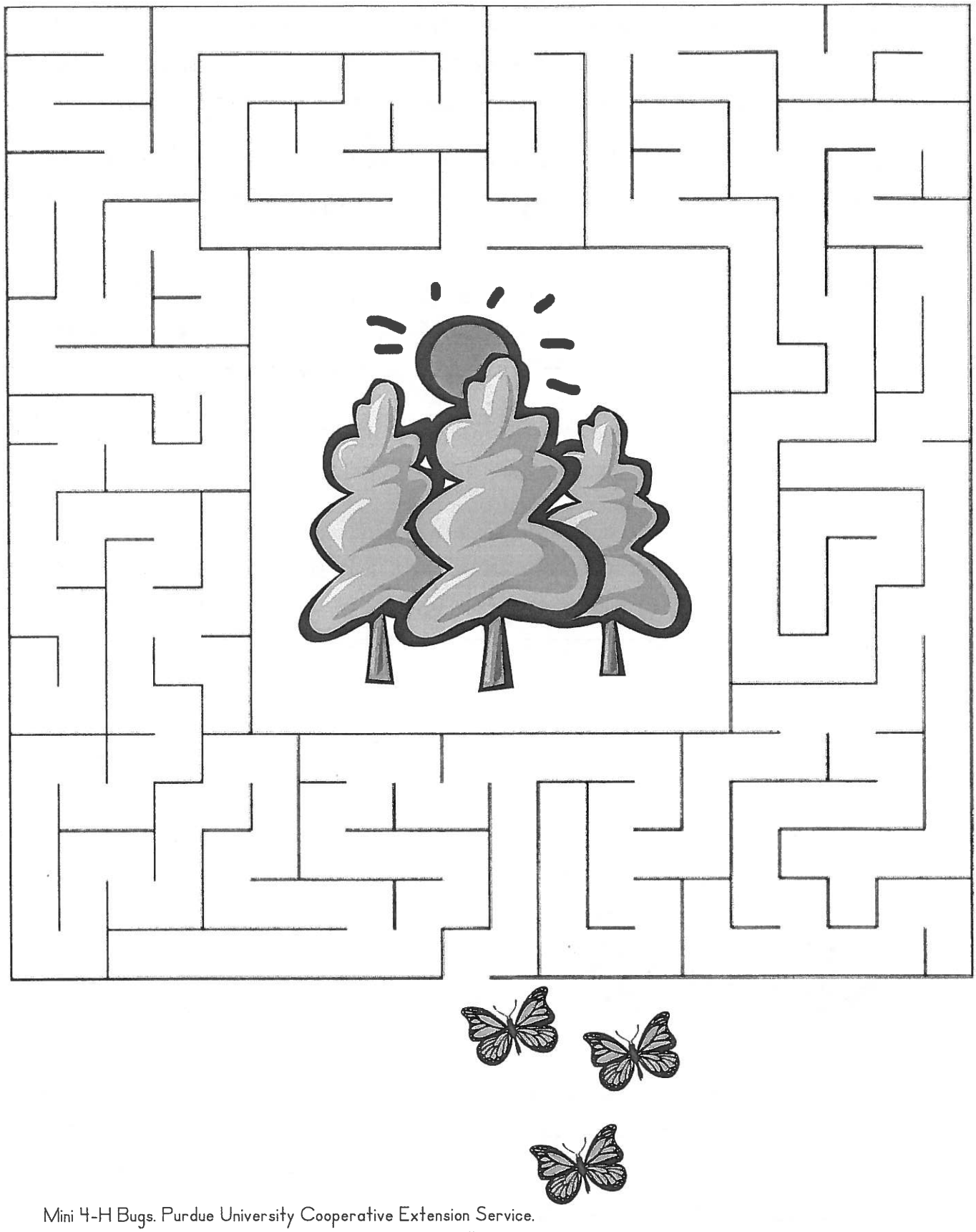
- **Help the Butterflies Migrate Activity Page**
- Pencil

What you do:

1. Draw a line through the maze from the monarch butterflies to the trees where they will spend the winter. Do not cross over the lines.


1. Encourage children to think about the ways people keep warm in winter. Make a poster using pictures from magazines showing the ways people keep warm. Are people and bugs similar in any of the ways they keep warm? (Example: People sometimes "migrate" to a warmer part of the world.)

# Help the Butterflies Migrate Activity Page



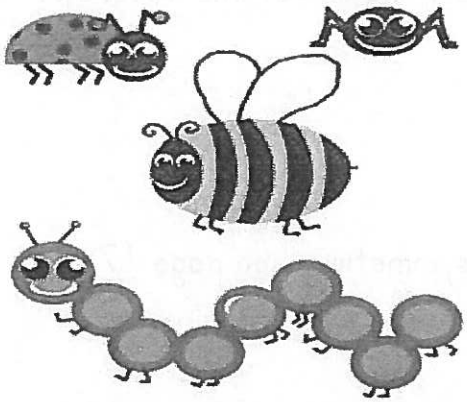
# What to Exhibit

## *Bugs*

Here is a list of projects that can be shown at the Fair. Pick *one* of the projects you would like to exhibit at the fair. You do not need to make the projects in special order. If you have any questions about your projects, contact your leader or the Extension Office. There are people there who can help you.

1. Make a poster of an insect or spider. Label the body parts.
2. Draw a picture of a butterfly. Be sure to make the designs on the wing symmetrical.
3. Make a poster or a book showing some of the ways bugs protect themselves.
4. Make a poster showing several kinds of bugs on one half and several kinds of spiders on the other half. You may want to draw the pictures or you may want to cut them from magazines.
5. Make several kinds of bugs. Use them to make a mobile of moving creepy crawlies.
6. Use a shoebox to encourage children to create a diorama for their bug. Use things from nature to make it realistic.

For more information on how to label your project, when to enter it in the Fair, and where your project needs to go, please contact the Extension Office.



Mini 4-H Bugs. Purdue University Cooperative Extension Service. Adopted from Purdue Research Foundation.

# More Places to Look

*A New Butterfly: My First Look at Metamorphosis* (Kids Can Pr, 1997) by Pamela Hickman is a story about the life cycle of a butterfly as seen through the eyes of a young girl. This book contains a section with extended information and suggestions for related activities.

*Bugs for Lunch* (Charlesbridge Publishing, 1999) by Margery Facklam is a rhyming book about bug-eating animals. There is a section at the back of the book that provides additional information on each bug eater.

*I'd Like to Be an Entomologist: Learning About Insects, Spiders and Other Arthropods* (Twin Sisters Productions, 1996) by Kim M. Thompson is a book and audio cassette combination that answers many questions about bugs through song. This set also introduces children to Dr. Randy Mitchell, an entomologist.

*Janice Vancleave's Play and Find Out About Bugs: Easy Experiments for Young Children* (John Wiley & Sons, 1999) by Janice Pratt Vancleave contains 50 simple experiments that help children discover information about bugs.

*The Big Bug Book* (Little Brown & Co., 1998) by Margery Facklam introduces big bugs to young audiences. The illustrations help children understand the size of the bug by picturing the bug with objects familiar to the child.

*The Butterfly Alphabet Book* (Charlesbridge Publishing, 1995) by Brian Cassie and Jerry Pallotta is a book filled with pictures and descriptions of butterflies with each picture representing one of the letters of the alphabet.

Anwer to
"Which butterflies are symmetrical" on page 17.
B and C.

## Acknowledgments:

We would like to thank the following people for their dedication to positive youth development:

### PRODUCTION TEAM

**Written and Compiled by:**
Roylene Laswell
K-2 Program Coordinator
4-H Youth Department
Purdue University

**Faculty Advisor:**
Mary Pilat, Ph.D.
4-H Youth Department
Purdue University

**Specialty Reviewers:**
Sue Baumgartner, Ed.D.
Williamson County Board of Education
Franklin, Tennessee

Dianna Cooper, M.S.
Child Development and Family Studies
Purdue University

Christian Oseto, Ph.D.
Department of Entomology
Purdue University

The Zaner-Bloser font used in this manual was chosen because it closely resembles children's writing style.

**Initial Development Team (1996-1997):**
A debt of gratitude is owed to the following people for their persistence and foresight in compiling the initial project activity manuals:

David Caldwell, Natalie Carroll, John Cates, Jonathan Ferris, Jeanette Findley, Brian Gauck, Dan Kirtley, Anita Krug, Leanne McGiveron, Carolyn Miner, RaeAnn O'Neill, Sue Provost, Scott Ripberger, Debra Searcy, and Susan Trutner.

**Contact your local Extension office for a list of available project activity manuals.**