

# Butterflies

## Resource Book

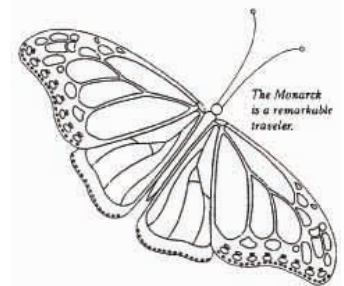


### Butterfly Facts

Butterflies are among the most familiar creatures around us and are the most beloved of the insect family because of their beauty. There are about 20,000 different species of butterflies in the world and about 725 of them live in the United States. The farther south you travel, you will find a greater variety of butterflies. In Mexico alone, there are more than 2,000 different kinds of butterflies. It is fortunate for butterfly watchers that most butterflies are active in the daylight hours and they rarely awaken before 9 a.m. At night, most butterflies sleep under leaves, in rock crevasses or in between blades of grass.

Most adult butterflies drink nectar from the flowers, although a few like tree sap or rotting fruit. Butterflies do have a sense of smell, but they do not have a nose. They "smell" with receptors on their antennas and on the bottoms of their feet.

Butterflies have four main stages of development: the egg, the caterpillar (or larva), the pupa (or chrysalis) and the adult. Butterflies lay their eggs on the plants or leaves that will be eaten by the caterpillar when it hatches. To help ensure that most of her eggs survive and are not eaten by ants or other predators, she lays a single egg on anywhere from a few dozen plants to as many as 1,500 different places. While in the caterpillar stage, its principle business is eating. It first eats its eggshell and then the leaf on which it hatched. This stage lasts about two weeks, during which the larva may increase its size more than 30,000 times. To accommodate this growth, the caterpillar must shed its skin several times. When it reaches full size, it looks for a place to start the pupa stage. It will attach itself to a plant stem, a twig or any place where the pupa will blend in. Some species burrow into the ground. One species, the Wolly Bear, marches across roads and up houses to find a high sheltered spot. These creatures are excellent mimics; some pupa resembles leaves or twigs. Once a spot is found that the caterpillar likes, it sheds its skin and a hard exoskeleton emerges. This is the pupa or chrysalis, and during this stage the caterpillar transforms itself into a butterfly. For most types, this process takes a period of several days. The butterfly emerges from the pupa and then spreads its wings to harden and will soon be able to fly away.



Butterflies have been symbols of beauty since before recorded history. Butterfly collecting has always been a popular activity, but recently over-collecting has become a problem. This is especially true where the butterfly's natural habitat has been damaged. There are now many laws that forbid butterfly collecting without a permit. This has given rise to the hobby of Butterfly Watching. As a result of this popularity, more and more zoos and animal parks are adding butterfly houses so the public has the opportunity to walk through and visit these beautiful insects up close.

More information on the butterfly can be found by contacting the North American Butterfly Assn., the Lepidopterist's Society or the Lepidoptera Research Foundation. You can also find many excellent books about butterflies in your local library, including *The Butterflies of North America*, by James A. Scott, *Familiar Butterflies of North America*, a handy pocket guide published by the National Audubon Society, and *The Art of the Butterfly*, by Ed Marquand. All these books are illustrated with beautiful pictures.

## Food and Shelter for Butterflies



Butterflies and moths are particular in their food choices. The larval stage of the butterfly may require food quite different than that of the adult. Some larvae consume tremendous amounts of plant material, seemingly devouring plants overnight. A common example in the garden is the tomato hornworm, which rapidly strips tomato plants of their leaves. An equally voracious, but beautiful, larvae is the Eastern Black Swallowtail, which is found only on plants in the carrot family, including celery, carrot, dill and parsley. A close relative is the Eastern tiger swallowtail that eats the foliage of wild cherry, birch, poplar, ash and tulip trees.

Adult butterflies require food in liquid form such as plant-produced nectar. They get some of it from flowers and from juices of extra-ripe fruit. The types of flowering plants you grow will determine the kinds of butterflies you attract to your backyard. In addition to the plants listed for hummingbirds, the butterfly bush is especially attractive.

Find out what species are common in your area and use plants they like. Nectar feeders can be placed in the yard to attract butterflies. Do not use insecticides near plants for butterflies. Learn to recognize larval egg forms. That large green and black caterpillar eating your dill may one day turn into the gorgeous butterfly you were hoping to attract!

Butterflies, like all insects, are most active when temperatures are warmer. While moths are commonly found at night, most butterflies are active on sunny, warm days. Butterflies will benefit from a basking site where they can warm up on cool mornings. Add a light-colored rock or concrete garden sculpture as a basking site. Butterflies also need a source of water. A shallow dish of water or a depression in a rock that retains water is all they need.

## Migration of Butterflies

Similar to birds, butterflies migrate, that is, they move to new areas on yearly basis. As summer warms, thousands of butterflies travel up from Mexico and the southern states to populate the rest of North America. When the weather begins to cool, the migration reverses. Perhaps the best known of these is the Monarch butterfly. One was marked in Toronto, Canada, and flew all the way to southern Mexico in one season!

The monarchs east of the Rocky Mountains spend their winters in Central Mexico and their summers in the Southwest US to lay eggs. Their offspring then flies to the Northern US to lay their eggs. These babies fly back to Mexico to start the cycle over again.

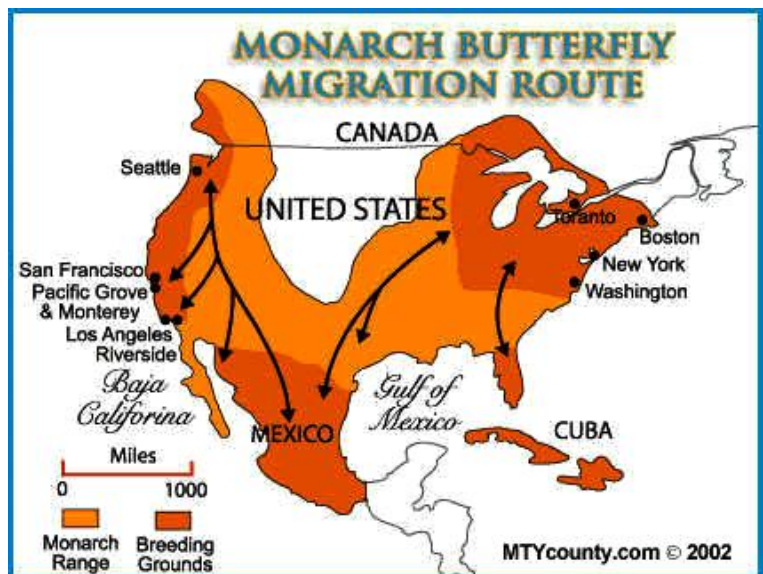
Some butterflies emigrant or travel long distances in one direction. As opposed to migrants, these butterflies do not return to the same place to lay their eggs. Two of these butterflies found in the Delmarva Peninsula are the Cloudless Sulfur and the Variegated Fritillary.

### Emigrant Butterflies

- Cloudless Sulfur
- Little Yellow
- Gulf Fritillary
- Variegated Fritillary
- Painted Lady
- American Lady
- Red Admiral
- Common Buckeye
- Long-tailed Skipper
- Clouded Skipper
- Fiery Skipper
- Sachem
- Ocala Skipper

### Migrant Butterflies

- Mourning Cloak
- Question Mark
- Queen
- Monarch



## Why are Butterflies Tricky?

Many butterflies blend in with leaves, branches and flowers. Some have bright colors that startle predators or attract other butterflies. A few butterflies look like butterflies that taste bad or are poisonous. Some even have spots on their wings that look like eyes.

Trickier Butterflies = have eye spots, startling colors or resemble foul-tasting butterflies

Hider Butterflies = Camouflage

## Butterflies and Moths



Butterflies and moths are insects, although they don't really look like insects. A long time ago farmers called the fluttering yellow insects in their fields "butterflies" because their colors reminded the farmers of the rich, light color of butter. So the name stuck.

Both moths and butterflies are insects which start life as an egg. They have three parts to their bodies, two pairs of wings, six legs and antennae. Butterflies and moths go through a complete metamorphosis. The caterpillars don't look a thing like the adults.

What is the difference between butterflies and moths? For one thing, most butterflies are active during the day, and most moths sleep during the day and are active at night. But that's not foolproof.

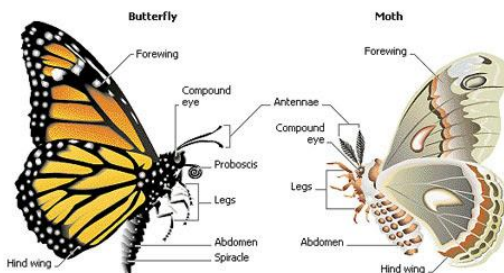
Here's the way you can really tell the difference, look at the antennae. Moths have feathery antennae and butterflies have antennae with little knobs on the end.

Butterflies have long, hollow mouths that are curled up neatly until they drink from a flower. Then they uncurl their mouths and use their "drinking straws" to sip up nectar.

Moth	Butterfly
	
Active at night (nocturnal)	Active during the day (diurnal)
Dull colors	Bright colors
Wings rest at their sides	Wings rest together and upright
Feathered or pointed antennae	Straight and clubbed antennae
Thick body	Thin body

\* There are some exceptions

## What's the difference between moths and butterflies?



Generally, moths are night creatures and butterflies are active during the day. Study the wings and you will notice that moths fold their wings along the sides of the body to form a triangular or delta shape. Butterflies close their wings upright along the back. Butterflies' wings have separate front and rear sections; the moths are able to hook these sections together. Moths have coarse, feathery antennae; butterflies have finer, threadlike ones with little lumps on the end. Compare the graceful narrow body of the butterfly with the fatter moths which seem like ugly sisters compared to the Cinderella butterflies, for all their fine colors and clever camouflage designs.

## More Butterfly Facts

- There are approximately 20,000 species of butterflies worldwide: 575 are in the United States, 175 in Canada, and 100 in Delaware. The greatest numbers are found in the tropics.
- Monarchs winter in Mexico west of Mexico City as well as in coastal California.
- The monarch grows until, after two weeks, it is 3,000 times its hatching weight.
- Monarch butterflies are plant specific in that they lay their eggs on a single host plant, such as milkweed.
- Cloudless Sulphur are not as selective for laying eggs and use plants in the same family, Fabaceae, of which the partridge pea is a member.
- The scientific name of the cloudless sulphur, *Phoebis Sennae*, comes from its close relationship with the plant wild senna.
- The Variegated Fritillary larvae may be found in a variety of plants: violets, passion flowers, plantains, and may apple.
- Butterflies are valuable natural resources and have an important ecological niche.
- Butterflies have specific habitat requirements.
- Habitat destruction is the greatest threat to butterfly populations worldwide.
- Many species of butterflies are threatened or endangered.
- Conservation efforts can help save butterflies and their habitats.
- The world's largest butterfly is the female Queen Alexandra's bird-wing (*Omithoptera Alewndrae*) from New Guinea. It has a wingspan of up to 12 inches.
- The smallest butterfly is the Pygmy Blue (*Brephidium exiles*) from North America, with a one-half inch wingspan.
- Many kinds of North American insects are currently listed as endangered species by the U.S. Fish and Wildlife Service. These include a moth and seven butterflies from California and a Florida butterfly named Schaus' Swallowtail.
- The Xerces Blue butterfly of California became extinct in the early 1940's. This is the first American butterfly species to be driven to extinction by human development.
- The Xerces Society was founded in 1971 and is named for the extinct Xerces Blue butterfly. This international group is dedicated to the conservation of invertebrates and their habitats.



## Butterfly Gardening

Attract butterflies to your garden with old-fashioned country garden perennials, nectar-bearing shrubs and flowers. Not only will your garden be colorful and much admired but you will all be delighted by the number of butterflies that visit your garden.

You may be lucky enough to watch the courtship behavior of the insects you attract. Sight and scent both play an important part in this. In the butterflies, the males give out a scent which attracts the female. Among the moths, it is usually the female who does so. Many male moths have extraordinarily sensitive smelling organs on their antennae and can smell a female's scent more than a mile away.

Try and find a freshly emerged Emperor female and put it in a muslin cage on a sunny afternoon. She will soon be surrounded by dozens of males, who may well stay in the garden to enjoy the plants that you have grown for them.

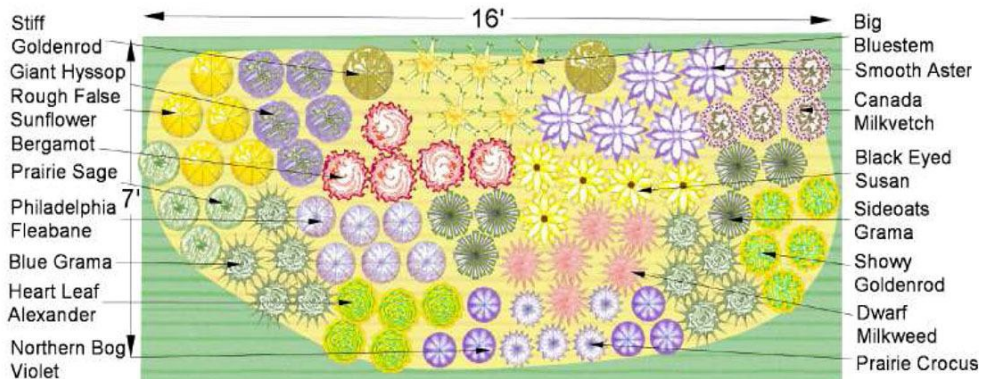
You can have lovely lilacs, buddleias and delicate bluebells, cheeky Michaelmas daisies and subtle heathers. Put in some polyanths and petunias and don't forget some herbs: not only will they attract the butterflies, they have more traditional uses too. Caterpillars will feed on thistle, dock and nettles in an overgrown corner.

Many nectar-bearing plants will occur naturally. Daisies and dandelions, for example. Unless you are aiming for the sort of manicured, smooth and closely cut lawn seen in adverts for lawnmowers, leave a corner of the garden wild where they can thrive.

To attract butterflies and bees, old fashioned country – garden perennials, nectar-bearing shrubs and flowers are what you need. This list is by no means complete, but most of the plants listed are easy to get.

ageratum,	eglantine rose	meadow cranesbill	sedum,
alyssum (white)	foxglove	michaelmas daisy	senecio
arabis (pink & white)	french marigold	mignonette,	soapwort
aubretia	goldenrod	myrth	sweet rocket
birds-foot trefoil	heathers	petunia	sweet william
buddleia (butterfly bush)	hebe,	phlox	thistle
campion	heliotrope	pink thrift	thyme
candy tuft	honeysuckle	polyanthus	valerian
catnip	knapweed	primrose	verbena
clover	lavender	ragwort	wallflower
cowslip	lilac	rubus	
daisy	mallow	scarlet geranium	
dandelion	marjoram	sea holly	

## Butterfly Garden 90 Plants



## How Many Days From Caterpillar to Butterfly?

**Learning Objective:** A certain amount of time is needed for growth.

**Needs:** Caterpillar

Home for the caterpillar

A caterpillar must eat and grow before it can become a butterfly. How long do you think it takes a caterpillar to become a butterfly? \_\_\_\_\_

Put the day of the month you received your caterpillars here: \_\_\_\_\_

Next, put the day of the month your caterpillars change into chrysalises here:

\_\_\_\_\_

Now put the day of the month your butterfly came out of the chrysalises here:

\_\_\_\_\_

How many days before the caterpillar became a chrysalis? \_\_\_\_\_

How many days before the chrysalis became a butterfly? \_\_\_\_\_

How many days before the caterpillar became a butterfly? \_\_\_\_\_

Which stage of the butterfly lasted the longest? \_\_\_\_\_

Which stage was the shortest? \_\_\_\_\_

Which stage did you like the best? \_\_\_\_\_

This activity will be completed approximately 17-20 days after you put your caterpillar in its home.

### Caterpillar House

#### Supplies

Wire mesh trash can

20-ounce soda bottle

Small plastic bowl

#### Directions

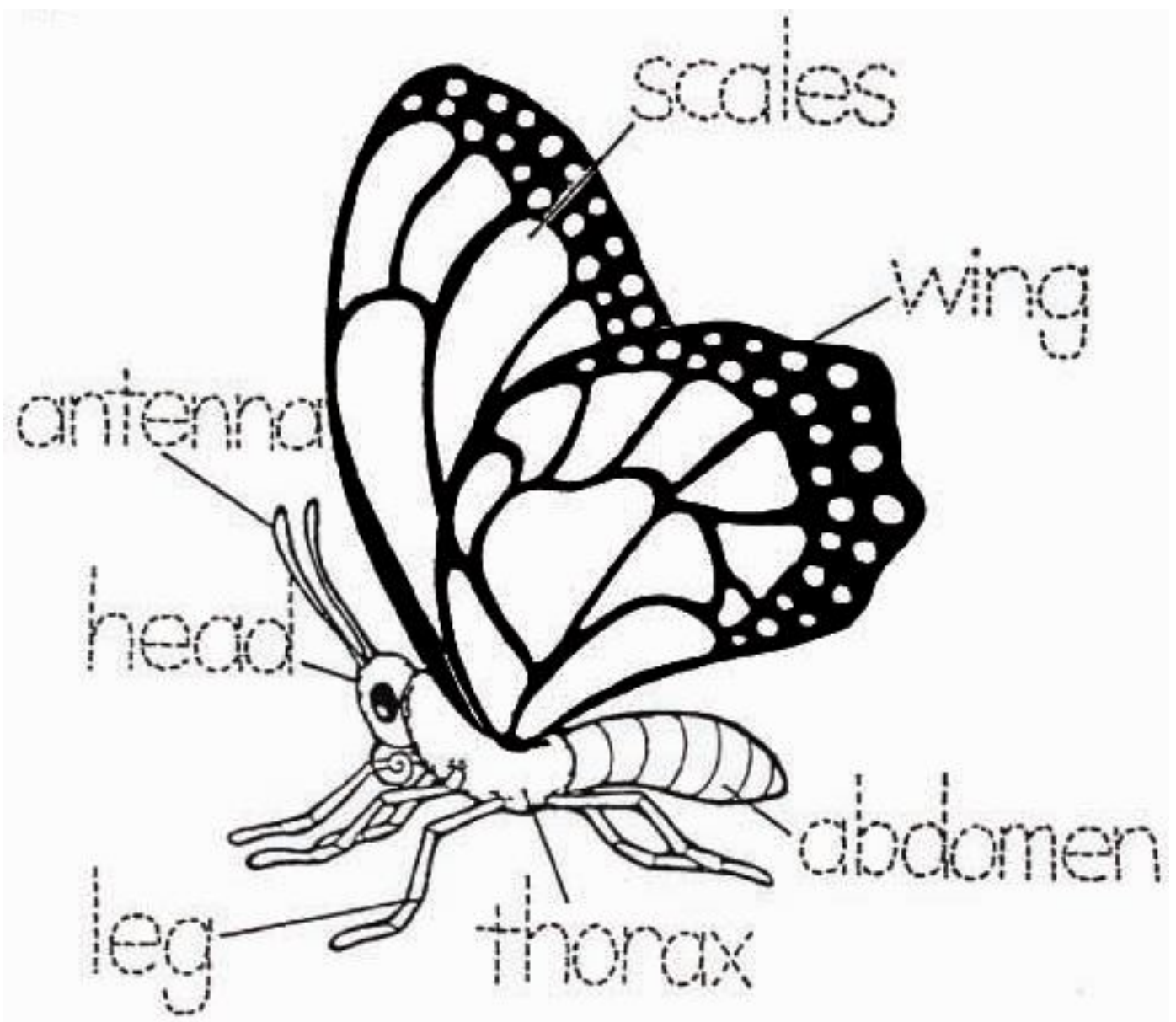
Place a 20-ounce soda bottle, half full of water, at the bottom of a wire mesh trash can. Place a small plastic bowl filled with garden soil next to the soda bottle.

Cover the wire mesh trash can with window screen. Cut the window screen so it is larger than the opening of the trash can.

Locate an 18-inch twig that has leaves and a caterpillar. Cut the twig from its parent plant.

Place the twig into the bottle. Make sure to put the end in the water that does not have the caterpillar on it.

Secure the window screen with a large rubber band. Push the extra screen down over the sides of the trash can. Stretch the rubber band so that it goes over the top of the trash can.



## Butterfly Body Parts

Count and write the numbers.

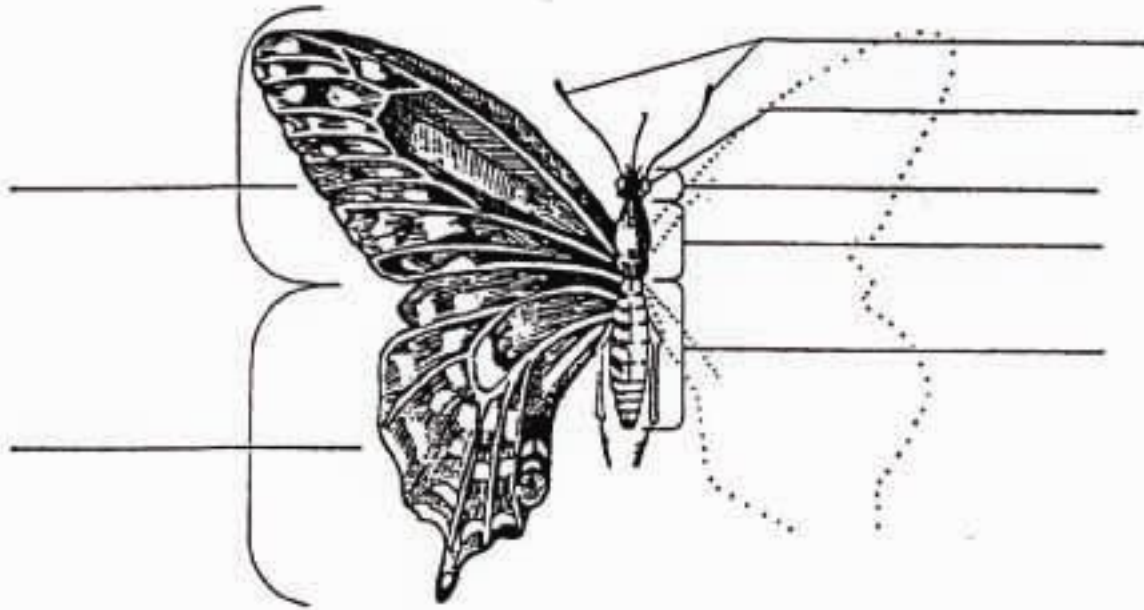
1. A butterfly has \_\_\_\_\_ legs.

## Butterflies and Moths

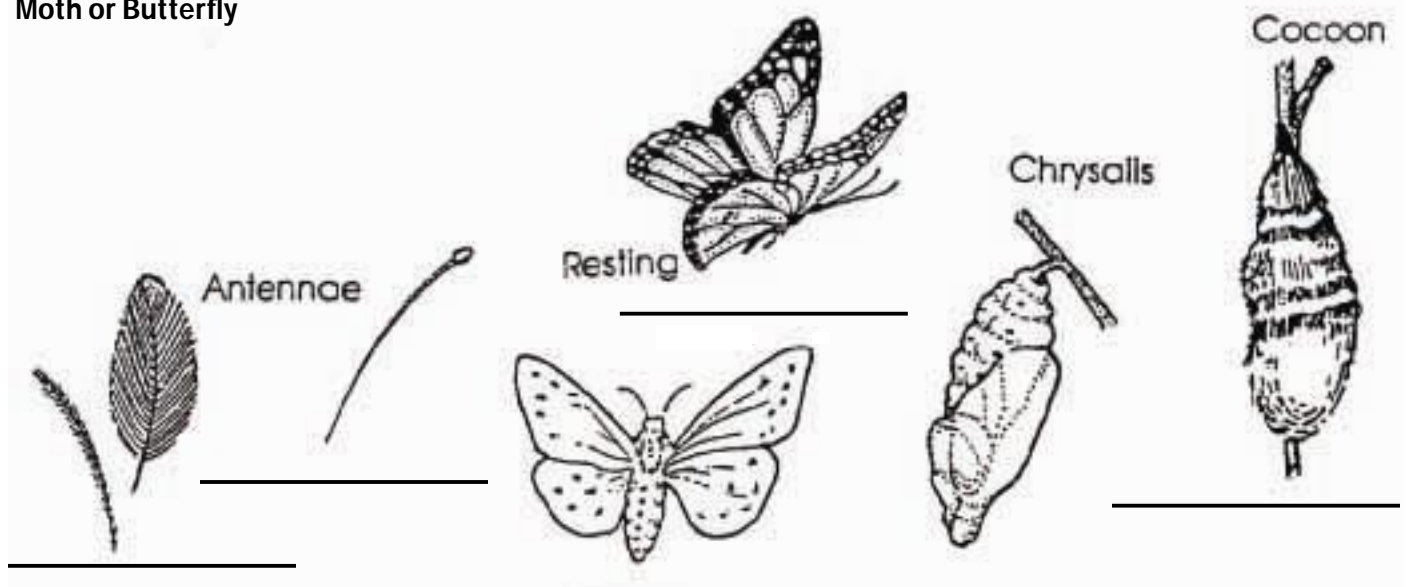
Butterflies and moths belong to the order of insects called Lepidoptera. Moths and butterflies each have some special characteristics to help you tell them apart. Label the parts of the butterfly. Label the special characteristics as either butterfly or moth.

Word Bank

head      antennae      abdomen      forewing      hind wing      eye      thorax



## Moth or Butterfly





# Butterflies from the World—Colombia

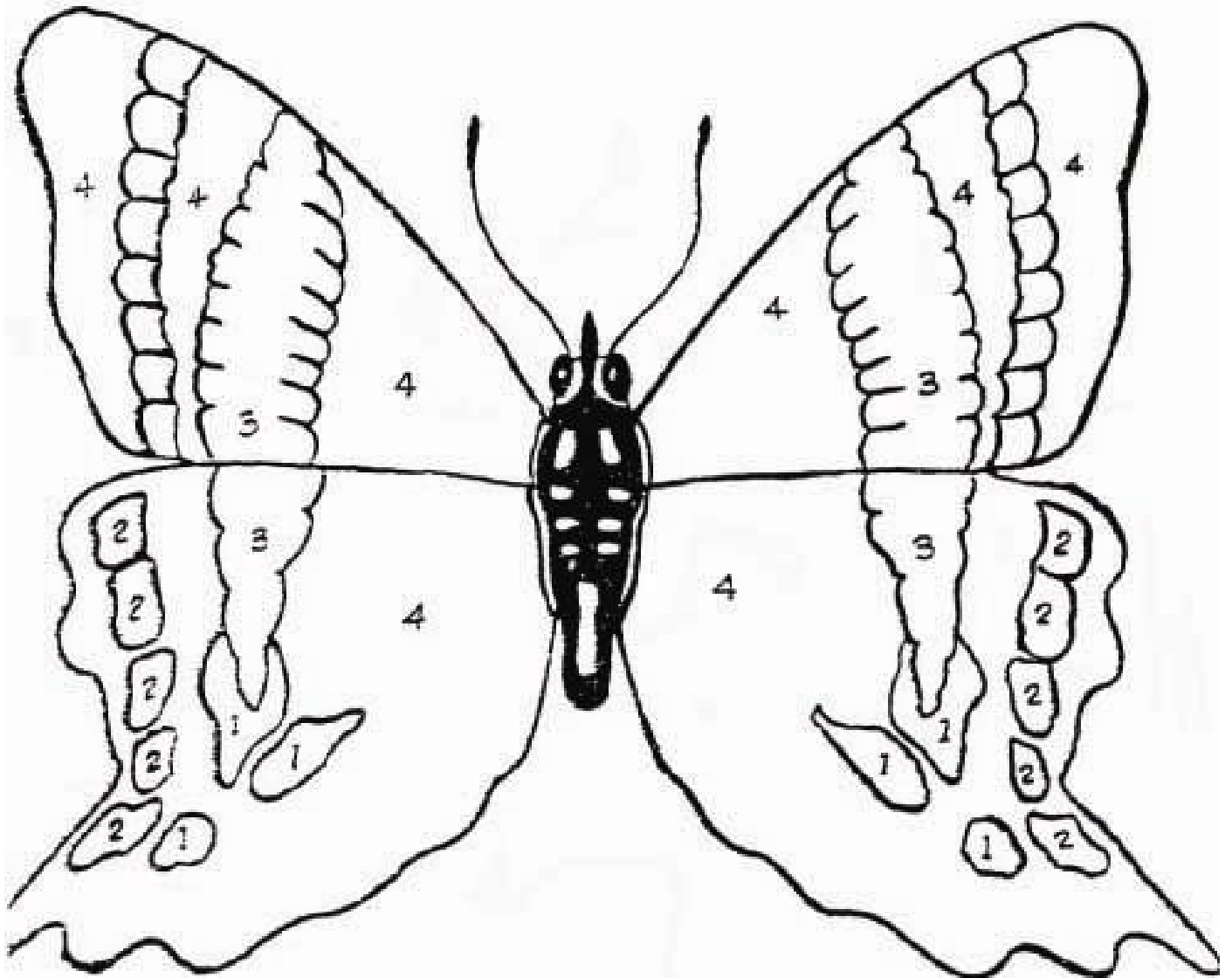
Color

1—Red

2—Green

3—Pink

4—Black

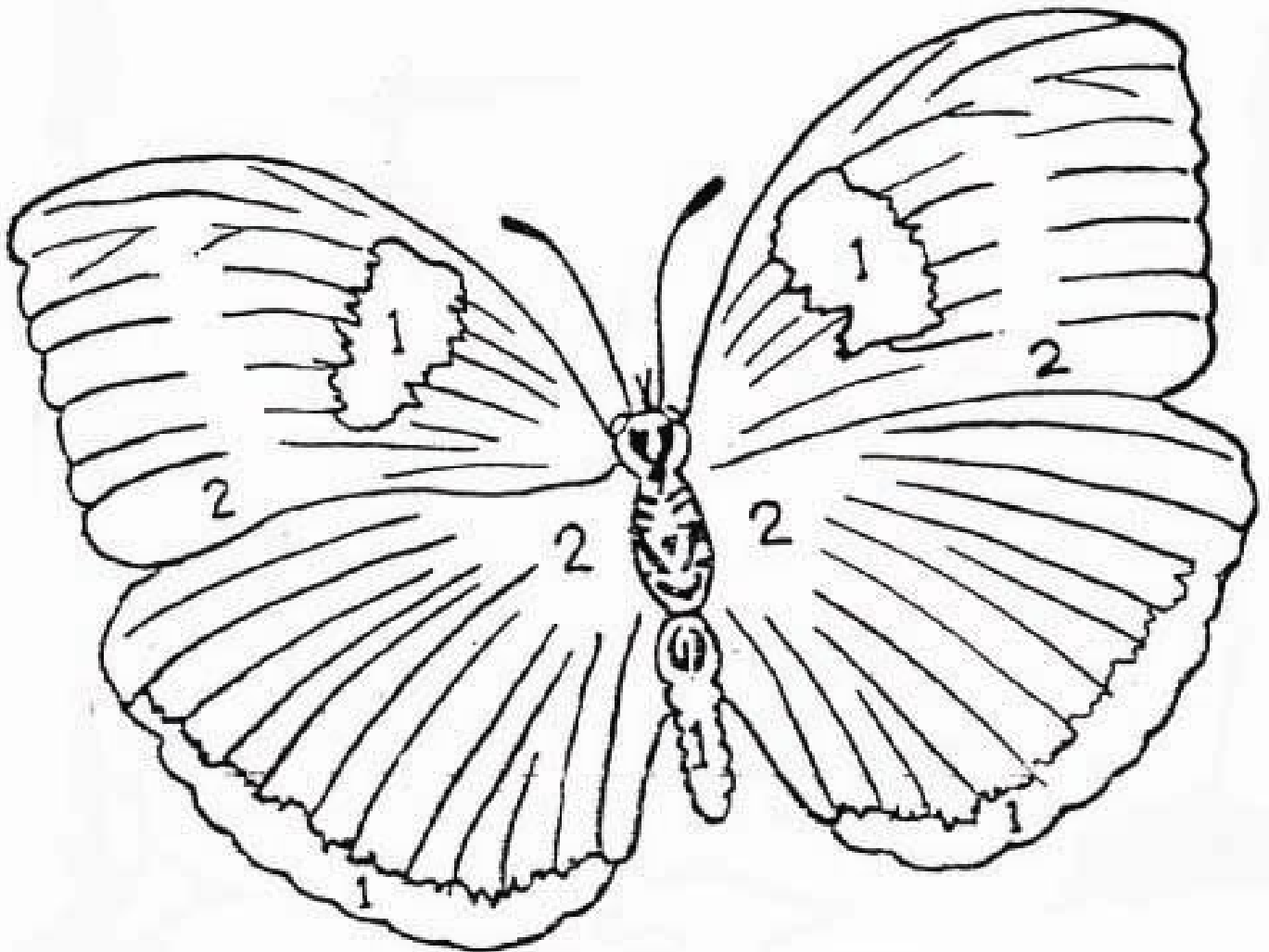


## Butterflies from the World—Central America

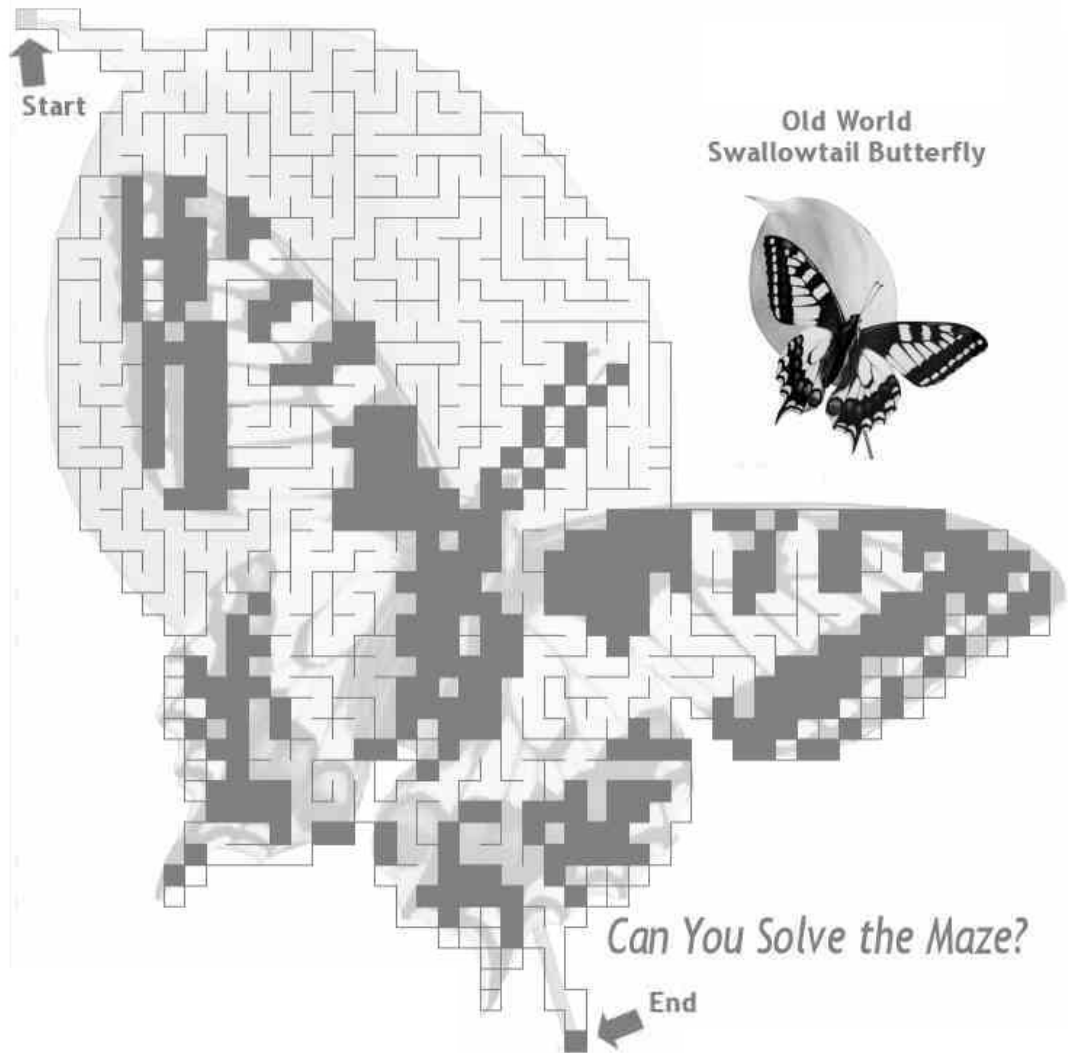
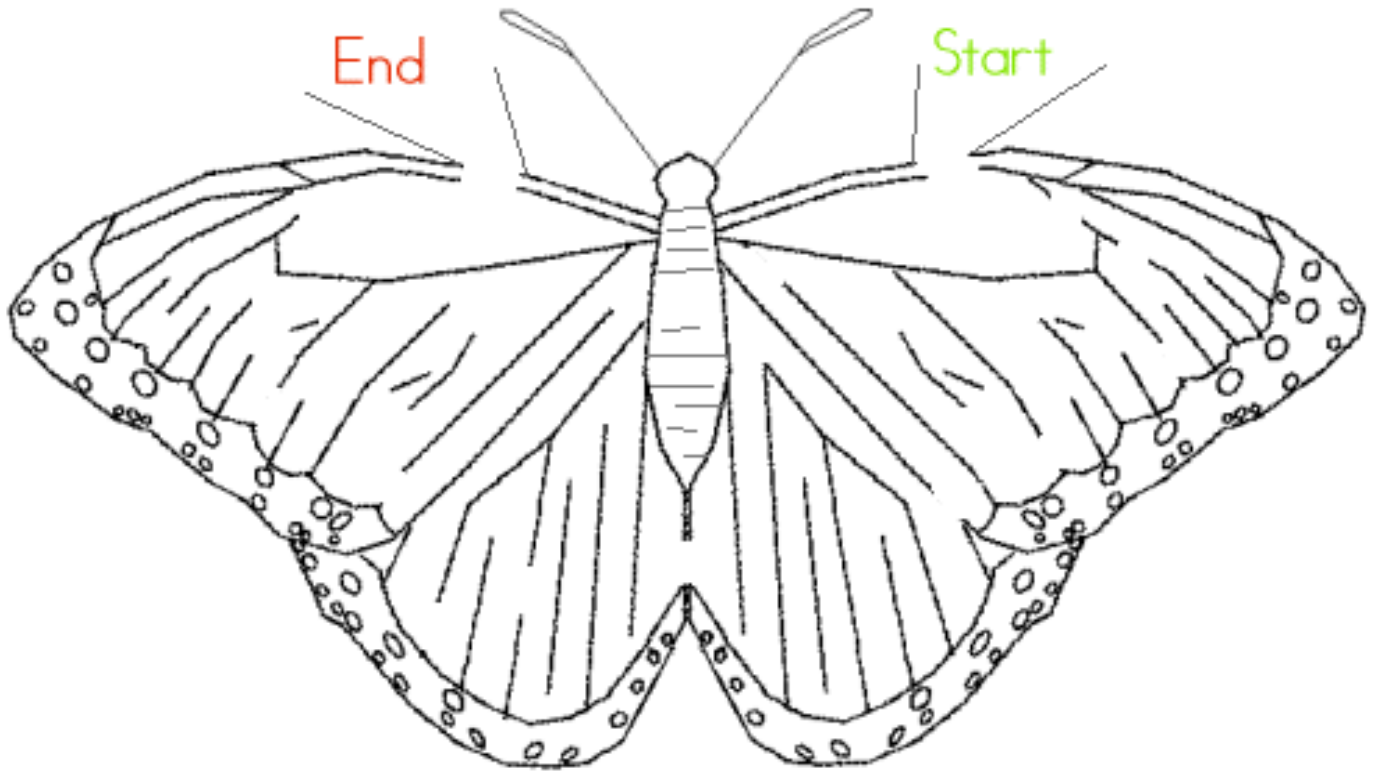
Color

1—Orange

2—Yellow



# Butterfly Maze

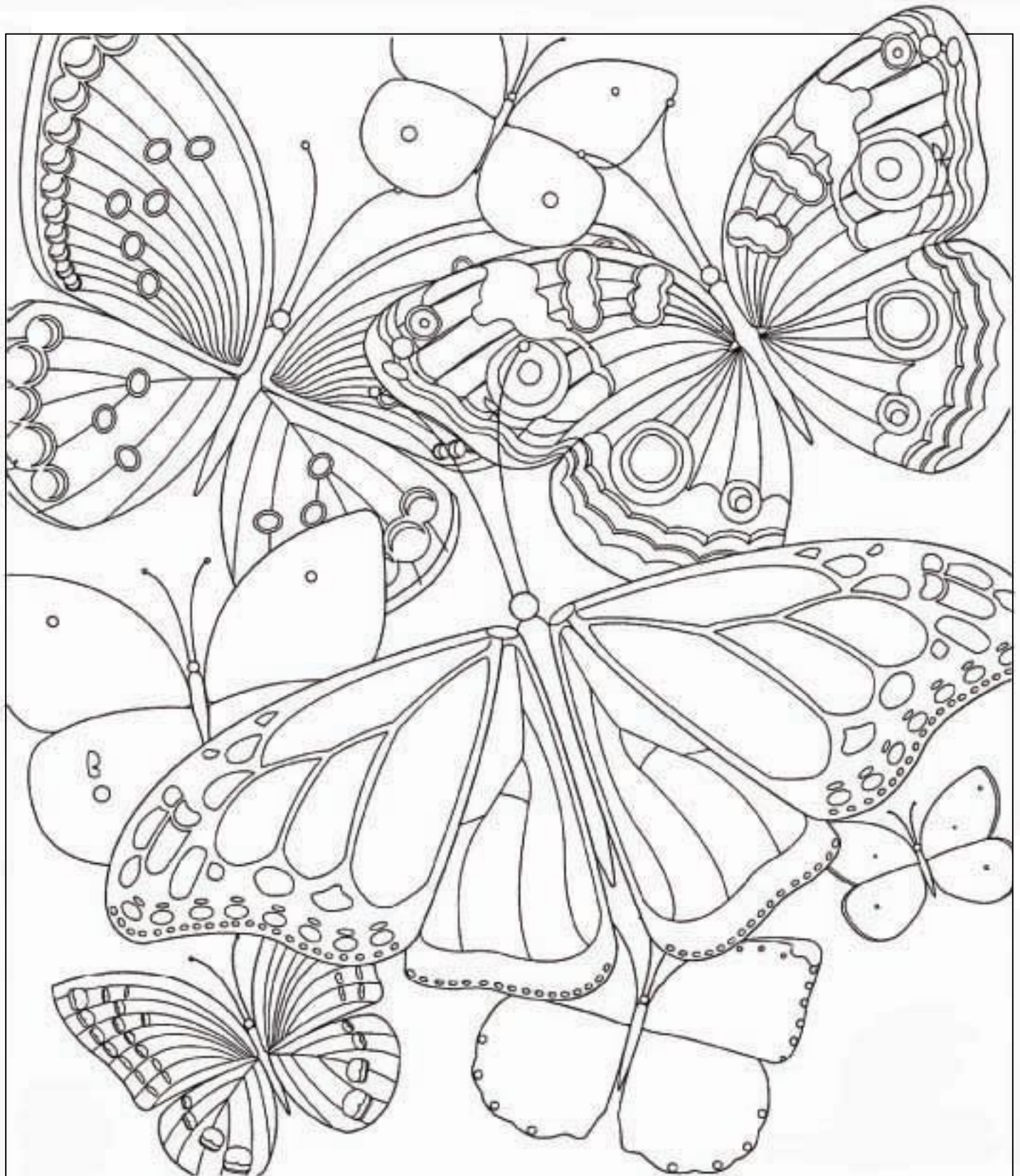


## Butterfly Word Search

Answer the following questions, then search for your answers in the butterfly puzzle. Words may be arranged horizontally, vertically, diagonally or backwards!

1. A slender, straw like feeding tube is a \_\_\_\_\_.
2. Butterflies and moths belong to the order \_\_\_\_\_.
3. Butterflies use their \_\_\_\_\_ to taste, smell, feel and navigate.
4. Butterflies have \_\_\_\_\_ eyes.
5. An \_\_\_\_\_ is an external skeleton.
6. Tiny \_\_\_\_\_ cover a butterfly's wings.
7. All insects have \_\_\_ legs.
8. Butterflies breathe through tiny holes called \_\_\_\_\_.
9. Insects belong to the Phylum \_\_\_\_\_.
10. Insects have \_\_\_\_\_ body segments.

BA OK  
OXIBRA OUNDPN  
MOKTCHOE ANTENNOB  
LSPIRACLES I I UNDS CRTAI  
COMPOUND II OBSCALEST  
SKEETHEJANTENNAEXELISE  
ARTHROPODAX HREYEEB  
AHRCALEPIDOPTEKRNL  
KSBEAPROBSOCISSMFSV  
FRSETOINETIREPOODATP  
EXSIXEL R OXXICER  
DEOB O EJLK





## Metamorphosis Play

After completing activities on metamorphosis, your troop could put on a play to show what they learned. As a troop, brainstorm some ideas for producing a play for parents or another troop. You might explain complete and incomplete metamorphosis. You can create your own script, use stick puppets, hand puppets, picture representations, plays with costumes, etc. also, since change (the process of metamorphosis) is presented throughout the world, the troop might divide into cooperative groups to produce separate acts showing metamorphosis in plant life, in people, in plants, in the growth of towns and cities etc...

The following puppet script uses seven characters to depict butterfly metamorphosis. (butterfly mittens and sleeve or sock caterpillars are easily constructed and fun to manipulate.)

### From Egg to Imago

#### Cast

Natalie the Narrator – a naturalist

Betty butterfly – adult female butterfly

The Incredible Inedible Egg – (also known as TIIG) – a butterfly egg

Lorena Larva – an early stage caterpillar

Cathy Caterpillar – a bright yellow and black caterpillar

Patricia Pupa – also known as Caroline (Kenny) Cocoon

Irene Imago – Beautiful, Fully Grown Butterfly

#### Stage Setting

Construct a standard puppet stage (a refrigerator box can be ideal for this). Above the stage floor, a cut-out frame with curtains to draw or roll down allows you to change scenes easily. The painted background is a large tree with big green leaves standing against a blue-sky background. A slender branch of a real bush or tree may be attached to lend three-dimensional reality.

#### Act One

Natalie the Narrator: (Voice off stage) Good Morning, Ladies and Gentlemen. Welcome to the dramatic world of metamorphosis. The first act of our play is entitled "From Egg to Imago" and features the following players: (follow each introduction, the curtain opens to show the featured puppet who takes a bow. The curtain closes.) Appearing first is Betty Butterfly. Second is The Incredible Inedible Egg, otherwise known as TIIG. Appearing Next is Lorena Larva. Appearing Fourth is Cathy Caterpillar. Appearing Fifth is Patty Pupa, also known as Cathy Cocoon. Last But not least and the star of our show is Irene Imago.

And now, ladies and gentlemen, act one of our metamorphosis play – "From Egg to Imago."

**Scene 1** (Light spring – like music begins, bird songs etc; curtain opens)

Natalie the Narrator: one spring day a beautiful butterfly comes fluttering by the tree in your garden. It circles the green leaves, looking for a soft spot to land.

Betty Butterfly: oh my, this is a beautiful tree. What nice juicy leaves to deposit an egg on! I think I'll put it right here. The when it hatches in a few weeks, it will have something luscious to gorge on – Chomp, Chomp! (flutters to one large leaf, moving wings slowly. Curtain closes as music fades.)

**Scene 2** (curtain opens to show the Incredible Inedible Egg, on a large leaf, wobbling, slowly back and forth)

The Incredible Inedible Egg: (strong, but hollow-sounding voice) I'm getting strong, and I'm getting out of here so I can see what's outside. This sticky shell is just too small for a growing guy/girl like me. My name is TIIG, and TIIG rhymes with BIG... and that means watch out world, 'Cause HERE I COME! (curtain closes)

**Scene 3** (Curtain Opens.)

Lorena Larva: (halfway out of shell, wiggling) Great! Great! It really feels good to get out of this tight-fitting shell. Hey, everything seems lighter outside, not dark at all. And all this wiggle work is making me feel hungry. Everything around here looks and feels good enough to eat. In fact, that's exactly what I intend to do, starting with his shell I've been cooped up in. YUM! (curtain closes as chewing begins)

#### **Scene 4** (curtain opens)

Cathy Caterpillar: (brightly colored yellow and black, chewing enthusiastically on a leaf) MMM...GOOD! This has to be the best leaf-burger I've ever eaten! I've gorged myself so much in the past two weeks that I'm more than twice the size I was just out of my egg. Every one of my fourteen leaf-stuffed segments is bigger now. If only I could find a pizza-plant to chew on. I'd eat even more (burp!). (curtain closes)

#### **Scene 5** (curtain opens)

Patty Pupa AKA Caroline Cocoon: (hanging from a twig in a hardened chrysalis or cocoon) After I reached my full size, I found a sheltered spot high on this twig. I spun a cocoon to rest in and continue my development. It's time for me to begin my last chance into my final bodily shape with wings and beautiful colors. I intend to stay inside until next spring and then come out to dazzle everybody with my new look. (curtain closes)

#### **Scene 6** (curtain opens)

Irene Imago: (colorful butterfly almost fully out of the cocoon) Golly this cocoon is sticky and tight! It reminds me of my old days trying to get out of the shell and become a caterpillar. But now I've got wings and can fly as far as I want.

No more hanging around (ha, ha) this old tree and this old garden!

I'm OUT OF HERE! (breaks away and flutters off stage)

Natalie the Narrator: (soft spring music in background again as in the opening scene) and so we see Irene (Imago setting off to see the world. Her brilliant color will serve as a warning to predators that this butterfly tastes unpleasant. We call this warning coloration. Other butterflies may take on color of leaves or bark. We call that protective coloration. Our beautiful butterfly has finally metamorphosed from EGG to LARVE to PUPA to IMAGO. Metamorphosis takes place throughout our world with plants, with people and even with planets.

## **Butterfly Problem Solving**

Read and discuss one or more of the following situations. How would you solve these problems?

### **Situation 1**

Your family lives in the State of Michoacan, Mexico, close to the area where the monarch butterflies over-winter. You and your father cut and sell fir trees from the nearby forest. This is the only income for your family of seven. You know that when you cut down trees some of the habitat for overwintering monarchs is eliminated. What do you do?

### **Situation 2**

You are a politician in Pacific Grove, California. You have \$250,000 in your Parks and Recreation budget to spend. With this money you could buy some acreage where the monarchs overwinter and turn it into a small park. Or you could buy land in another area and a park with playgrounds, baseball diamonds, and a large concession stand which would make you money for the Parks and Recreation Department. With the additional income you would be able to purchase more equipment and land for the Parks and Recreation Department. What would you do?

### **Situation 3**

There is a field of meadow flowers near your school. Every fall your scout group has captured and tagged monarchs in the field to help study their migratory patterns. This fall, the owner of the field is going to lease the area during the summer so it will be ready for fall soccer practice. What would you do?

### **Situation 4**

You and a group of friends are on vacation in Mexico. You are excited to learn that the monarch overwintering sites are nearby. When you arrive at the monarch preserve, you find that all the official butterfly trails are closed for the day. A person standing nearby overhears how disappointed you are that the trails are closed. He offers to sneak you into the preserve through a back gate. What do you do?

## Oh Butterfly! Game

**Learning Objective:** To identify and understand the four basic components of habitat: food, water, shelter and reproductive space.

**Number of Participants:** 15 or more Outdoor Activity

**Best Played Outdoors:** This active game, played in ten rounds, identifies the four essential components of a butterfly's habitat or home. These include: food, water, shelter and reproductive space.

A variety of other factors affect the ability of butterflies to successfully reproduce and maintain their populations. These are called limiting factors and include predator / prey relationships, weather conditions, natural disasters and habitat destruction. Nature is never "in balance," and this activity will demonstrate the changes that constantly occur.

### Directions

Fifteen or more players line up shoulder to shoulder and number off, one through four.

All the "ones" regroup and form another line about twenty yards away. Ones become butterflies.

Twos, threes and fours become components of the habitat: each of these players will choose to become either food, water or shelter during each round of the game. Assume there is adequate reproductive space.

The object of the game is for the butterflies to find sufficient food, water and shelter for survival. A butterfly may choose to hunt for any one of these habitat components by making a sign during each round of the game. The butterfly may change its sign each round. When a butterfly desires food, it grasps its stomach with its hands. If the butterfly wants water, it cups its hands over its mouth. A butterfly requiring shelter clasps its hands together overhead.

Twos, threes and fours decide whether they want to represent the food, water or shelter for each round. They use the same signs as the butterflies.

The game begins with all the butterflies (ones) in a line and the food, water and shelter (twos, threes and fours) in another line. The lines should be facing in opposite directions about 20 yards apart.

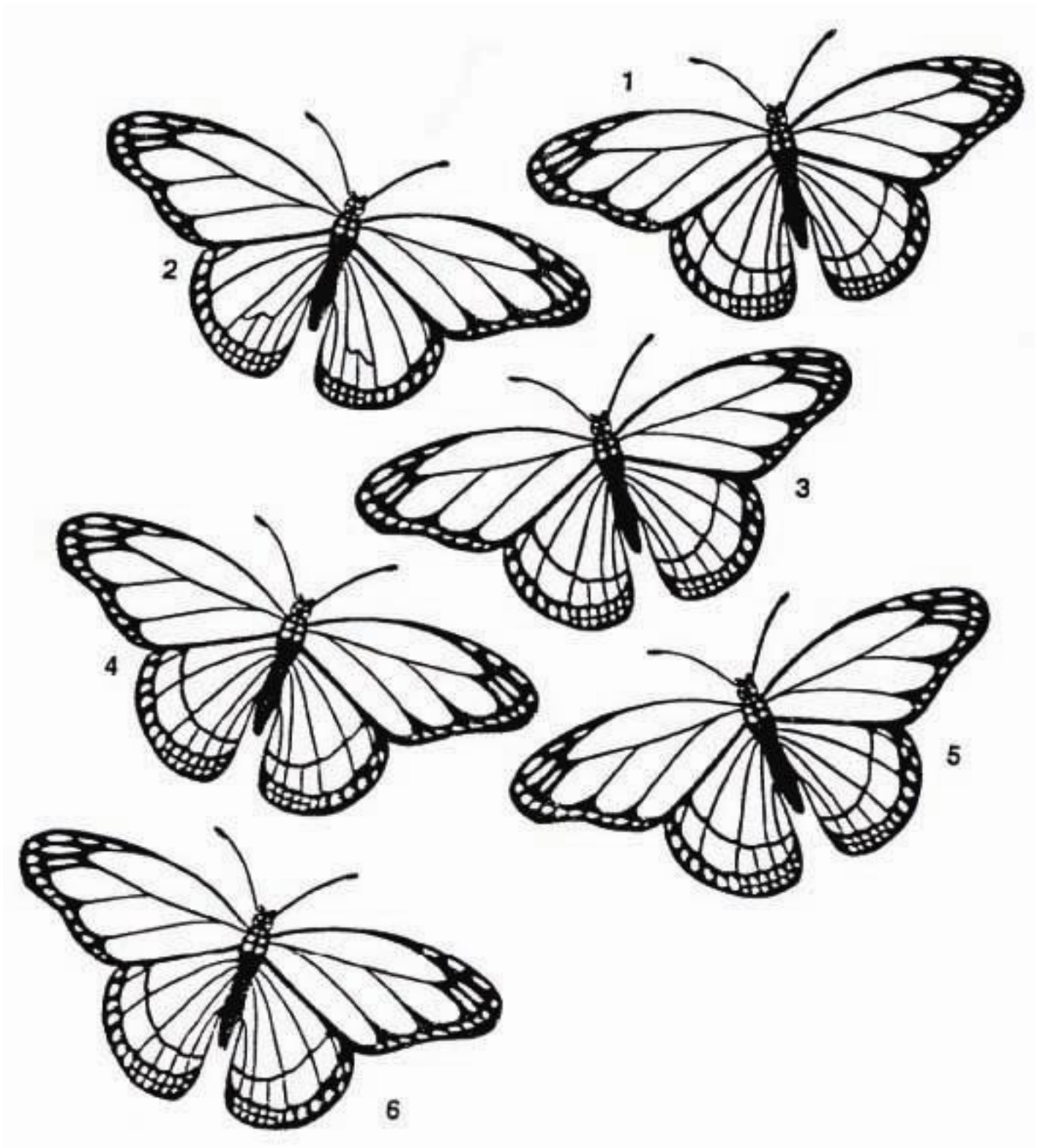
Everyone makes and holds his sign without turning around. The group leader counts, "One, two, three." On the count of three, the habitat players turn around and remain in place to face the butterflies. The butterflies turn around and run toward a habitat player that has a food, water or shelter sign that matches his own sign. Participants may not change their signs during a round.

A butterfly that reaches its habitat requirement takes that "food, water or shelter: match back to the butterfly line and the person becomes a butterfly.

Any butterfly that is not successful in finding the habitat component it needs, "dies" and becomes part of the habitat line. Keep records on how many butterflies there are at the beginning of each round. At the end of ten rounds, discuss possible reasons for the changes in the butterflies' population. Natural populations often fluctuate in response to the changes in their habitat.

## Butterfly Look a Likes

To keep from being eaten, the Viceroy butterfly looks like the bitter tasting Monarch butterfly.  
Can you find the one Viceroy hiding among the Monarchs?





## **Butterfly Concentration**

### **Needs**

Butterfly Concentration card set for each group of 2 to 4 girls.

or -

Scissors, Glue, Index cards, Butterfly concentration pictures (2 sets of pictures per group)

### **Directions**









to make the concentration cards, cut out pictures and glue each one to an index card. Let them dry. You are ready to play.

to play, mix up the cards and place them face down in rows of four.

Have girls take turns turning over two cards at a time. A match is the picture of the butterfly's body part and the name of the part. If a match is made, the player picks up the cards, keeps them and continues to play. If a match is not made, the cards are returned to the face down position and the play goes to another participant.

The game is over when the players have picked up all the cards. The person with the most matches at the end of the game is the winner!

Butterfly Concentration Cards

MOTH ANTENNAE	BUTTERFLY ANTENNAE	BUTTERFLY WINGS	SPIRACLES
COMPOUND EYES	COILED PROBOSCIS	UNCOILED PROBOSCIS	JOINTED LEGS
			
			

## Caterpillar Games

### Caterpillar Race

Divide the troop into two or three teams. Each team stands in a straight line, and the first girl in each line places her hands on the ground. Then each girl behind her bends forward and grasps the ankles of the girl in front of her. On signal, the caterpillars move forward and the first team to cross the finish line, still intact, is the winner.

### Caterpillar-Hug Walk

Have the girls sit in a line with their legs wrapped around the girl in front of them. Now tell them to wrap their arms around the girl and try to walk like a caterpillar by lifting each side of their bottoms up and forward.

## Butterflies

**Equipment:** about 12 cardboard butterflies per six, in a different color for each six.

**Formation:** the girls start in their six corners.

### To Play

The Guider gives a set of butterflies to each 'sixer' who distributes them to the rest of her six. At the word 'go' the girls have three minutes to hide their butterflies, but making sure that a small part of each one is showing. At the end of that time, each six is given a different color, and has three minutes to find as many butterflies as possible of that color. When the time is up, each six looks for any of its own butterflies which have not been found. They score one point for each butterfly found which belonged to another six and two points for each of their own which were undiscovered. The six with the highest score wins.

## The Butterfly Song

(to the tune of 'Froggie Went a Courting')

There once was a female butterfly, un-huh, un-huh.

There once was a female butterfly, un-huh, un-huh.

There once was a female butterfly...

She laid an egg of tiny size.

Un-huh, un-huh.

Soon this tiny egg did break, un-huh, un-huh.

Soon this tiny egg did break, un-huh, un-huh.

Soon this tiny egg did break...

A caterpillar made a great escape

Un-huh, un-huh.

It munched away on leaves of green, un-huh, un-huh.

It munched away on leaves of green, un-huh, un-huh.

It munched away on leaves of green...

It got so big it split its seams.

Un-huh, un-huh.

It made a case and there it hid, un-huh, un-huh.

It made a case and there it hid, un-huh, un-huh.

It made a case and there it hid.

We call this case a chrysalid.

Un-huh, un-huh.

(Slow)

'Me caterpillar changed inside, un-huh, un-huh.

The caterpillar changed inside, un-huh, un-huh.

'Me caterpillar changed inside, un-huh, un-huh.

(Fast)

One day it hatched as a butterfly

Un-huh, un-huh, un-huh.

## Careers in Entomology

### Destructive Insects

Insects are one of humanity's chief competitors for food and fiber. For example: from 1925 to 1958, grasshoppers destroyed about \$800 million worth of agricultural crops and \$2 billion worth of range grass in the U.S.

### Beneficial Insects

There are some insects which are beneficial to people, such as silkworms, honeybees, etc. Praying mantises, ladybugs and lacewings prey on insect pests. Entomologists seek to protect these helpful species and increase their numbers.

### Insect Scientists

Entomology is a major branch of zoology concerned with the study of insects. People who specialize in insects are called entomologists. They investigate the anatomy, physiology, development, life history, behavior, ecology and classification of insects and related arthropods. There are about one million species of these animals.

### Career Specialties

Most entomologists work in the field of economic entomology, also called applied entomology. They study insect pests that damage crops, ornamental plants, stored products, and buildings, or that endanger the health of human beings and animals. Agricultural entomologists study insect pest of food and fiber. Forest entomologists study pests of timber. Medical entomologists and veterinary entomologists seek to decrease the threat of insects that cause injury or disease to people and animals. Scientists reduce the numbers of insect pests through a variety of controls. These include cultural controls, such as draining of swamps where mosquitoes breed; chemical controls, such as the use of insecticides and insect repellents; and biological controls, such as the use of animals that naturally prey on insect pests.

### Career Requirements

Students who wish to pursue careers in entomology must have at least a bachelor's degree in entomology or biology. Most teaching and research positions require a master's or doctor's degree in entomology from agricultural university. Entomologists are employed by state and federal agricultural experiment stations and by public health agencies. They may also work for universities or museums. Some entomologists work in industry, particularly in companies that produce pesticides.

## Butterfly Crafts

### Mixing Colors

#### Coffee Filter Butterfly—Water Color Paint

##### Supplies

½ black chenille stem

Paper coffee filter

Water color paints

Paint brush

Water

##### Directions

Flatten out paper coffee filters on news paper and dampen the filter slightly.

Place drops of water color on the wet filter with the brush. The colors will spread out, make new colors and form nice patterns.

Let dry.

Pinch the filters in the middle and secure with pipe cleaners for the body. Fold the chenille stem in half. Remember, you are only using half of a chenille stem to begin with.

Fold the coffee filter accordion style, in about ½" pleats.

Position the pleated coffee filter into the bent end of the chenille stem. Center the filter at the bend.

Twist the chenille stem around the filter to secure it in place.

Bend the tips of the chenille stems over about ¼" to create the antennae.

Fan out the butterfly wings.



#### Coffee Filter Butterfly—Food Coloring

##### Supplies

½ black chenille stem

Paper coffee filter

Food Coloring

Bowls

Water

##### Directions

Put a few tablespoons of water in each bowl and add food coloring to make vivid colors.

Fold the coffee filter in half, then half again, then again, as many times as you can.

Have the girls dip different parts of the folded filter in different colors.

Unfold and let dry.

Pinch the filters in the middle and secure with pipe cleaners for the body. Fold the chenille stem in half. Remember, you are only using half of a chenille stem to begin with.

Fold the coffee filter accordion style, in about ½" pleats.

Position the pleated coffee filter into the bent end of the chenille stem. Center the filter at the bend.

Twist the chenille stem around the filter to secure it in place.

Bend the tips of the chenille stems over about ¼" to create the antennae.

Fan out the butterfly wings.



## **Butterfly Egg Carton and Coffee Filter Craft**

### **Supplies**

children's markers -- crayola or similar

2 coffee filters,

water spritz bottle or small brush (paintbrush, toothbrush, etc)

egg carton,

paint and paintbrush -- use a colour of paint that looks nice with the marker colours

scissors,

tape or stapler

wiggly eyes (optional)

Pipe cleaner (optional)

### **Directions**

Cover your work space with newspaper or paper towel. Newspaper might colour your project when you get it wet, so pick a piece without too much ink on it.

Draw lines or squiggles with marker on your coffee filter. Don't use too many different colours or you'll end up with a muddy brown when they mix.

Repeat with the second coffee filter, trying to keep the colors similar

Fill a bowl with water and use a small brush to splatter drops onto your coffee filters. OR Use a spritz bottle to lightly spray water on your coffee filter.

Don't go too crazy -- you can always add more water. Splash a bit then watch the colours blend together, then add more water if you need. The water "creeps" across the filter quite slowly. If you put too much water on, you'll get puddles of colour and big patches of white.

Set aside your coffee filters to dry.

Cut two attached cups from the egg carton. This will likely require adult assistance and can be done before craft time.

Paint the outside of the egg carton cups a colour that looks nice with your decorated coffee filters. This will be the body of the butterfly.

Set aside to dry.

Note: Use what you have, but we usually use acrylic paint. It's usually available inexpensively at our local Dollar Store. It dries very fast. If you get it on fabric, wash IMMEDIATELY -- it will come out when it's still wet but it is permanent once it dries.

Once everything is dry, scrunch the edge of each coffee filter and tape or staple together to form the wings.

Slide the wings in between the egg carton cups.

You can add a dab of glue to hold them in but ours seemed to stay without any help.

Optional: Poke two holes in the top of one egg carton. Thread the pipe cleaner through these holes and curve the ends to make antenna

Optional: glue wiggly eyes or cheerios onto the front of the face (or you can add a couple eyes with black marker.

## Egg Carton Caterpillar

### Supplies

cardboard egg carton  
scissors  
green tempera paint  
paint brush  
pipe cleaner (chenille)  
sharp pencil  
wiggly eyes, 2 cheerios or 2 fruit loops  
Glue



### Directions

Cut one strip of cups (6 cups) from the egg carton.  
Paint the cups green and let dry  
Using a sharp pencil, poke two holes in the top of the first cup.  
From inside the cup, poke both ends of the pipe cleaner through the pencil holes (one end through each hole)  
Wrap the ends of the pipe cleaner around the pencil to make it curly  
Glue the wiggly eyes onto the head

## Bouncy-pillar Paper Craft

### Supplies

one or two colors of construction paper  
scissors  
tape or glue  
Markers

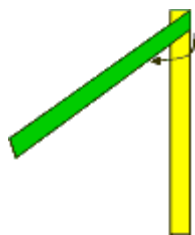


### Directions

Cut two strips of construction paper about 1 or 2 inches wide and 11 inches long (it doesn't have to be exact).  
Optional: cut two more identical strips and glue or tape to the first strips to make 2 really long strips (1 inch by 22 inches)... this makes a longer, bouncier caterpillar.  
Tape the pieces of paper together in an L shape (be careful not to cover the whole thing with tape so you can draw a face on ... it's best to use a rolled up piece of tape to stick the pieces together)  
Accordion fold the paper (see the diagrams below if you don't know how to accordion fold paper)



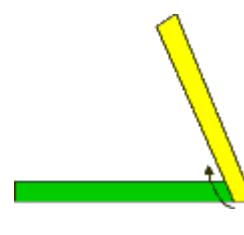
STEP 1  
tape as an L



STEP 2  
fold bottom piece  
over top piece



STEP 3  
crease to make another L



STEP 4  
repeat step 2

Continue until you've folded the entire thing and tape the end

Use markers to draw a face on the front of your caterpillar

Optional: cut a couple of tiny pieces of paper about 3 inches long and roll them up then unroll them (so they're curly). Glue them onto the head as antennas.

## **Butterfly Fan**

### **Supplies**

A4 or Letter size paper

Cardboard

Craft stick

Crayons, markers or colored pencils

Glue stick

Scissors

Water-based paint (optional)

Glitter glue, puffy paint, stickers, wiggle eyes (optional)

### **Directions**

Draw two large identical-sized butterflies or copy the large butterflies templates 6 twice .

Color the butterflies. If you're using the templates, you can draw and add more details if you like.

You may even add sparkle and texture using glitter glue or puffy paint.

Cut out both butterflies. The antennae are quite delicate but if you can cut them out, you may include them on at least one butterfly.

Trace a butterfly onto a piece of cardboard. Cut out the cardboard butterfly - this will be used to reinforce your fan.

Glue one butterfly onto the piece of cardboard, aligning them around the edges.

Obtain one large craft stick for the fan's handle. You can paint it if you wish.

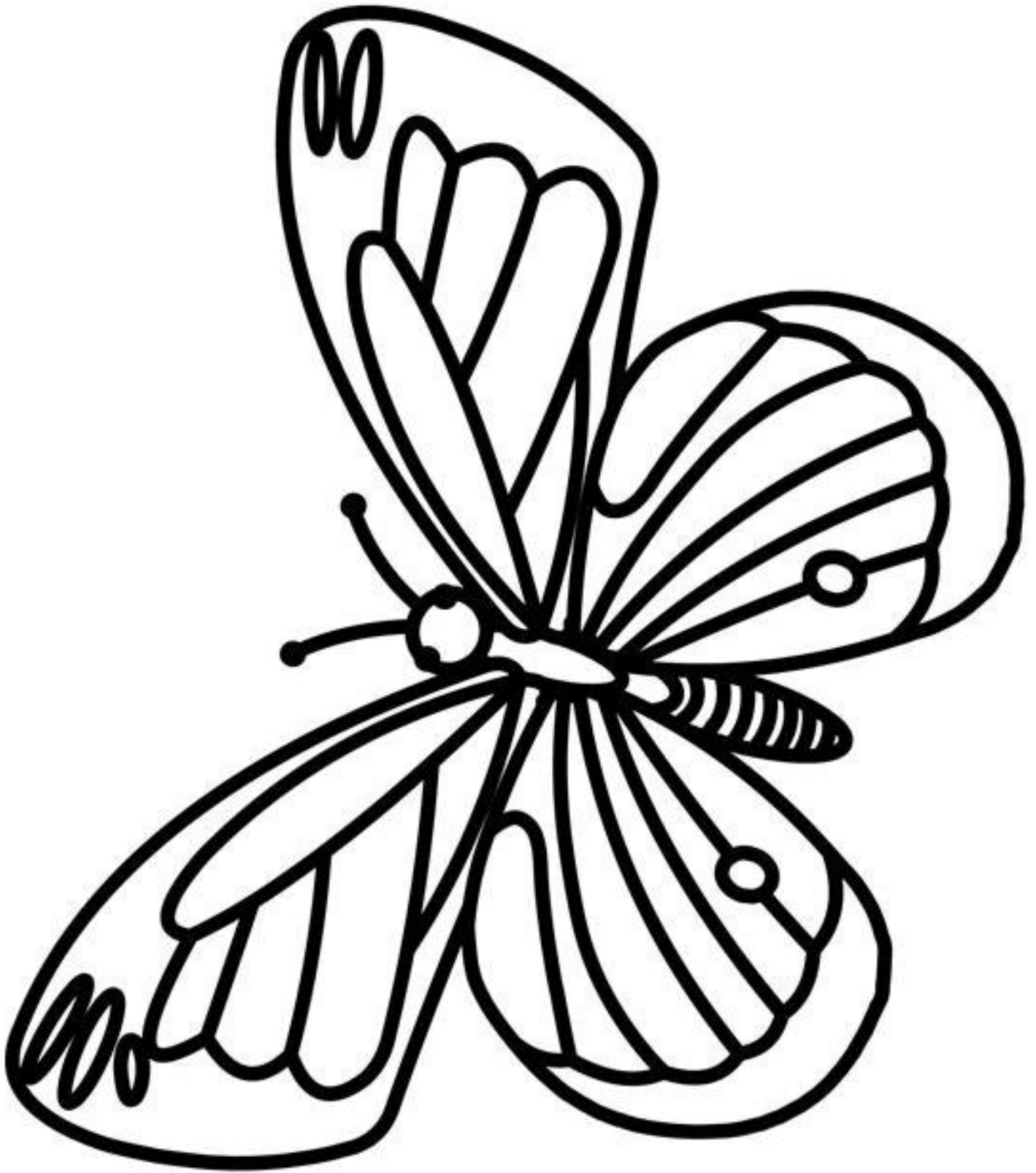
Glue the craft stick at the back of the cardboard-reinforced butterfly. Position the stick in the middle, with its top end as close to the butterfly's head as possible. This ensures that the craft stick supports the entire length of the butterfly body.

If your butterfly has no antennae, you can still make a pair by cutting out two thin paper strips and gluing them at the back of the butterfly's head.

Finally, glue the second butterfly on top of the first, sandwiching the cardboard in between.

As an option, you may glue on additional details such as wiggle eyes, sequins, stickers, or rhinestones.

Wait for the glue to dry before using your butterfly fan.

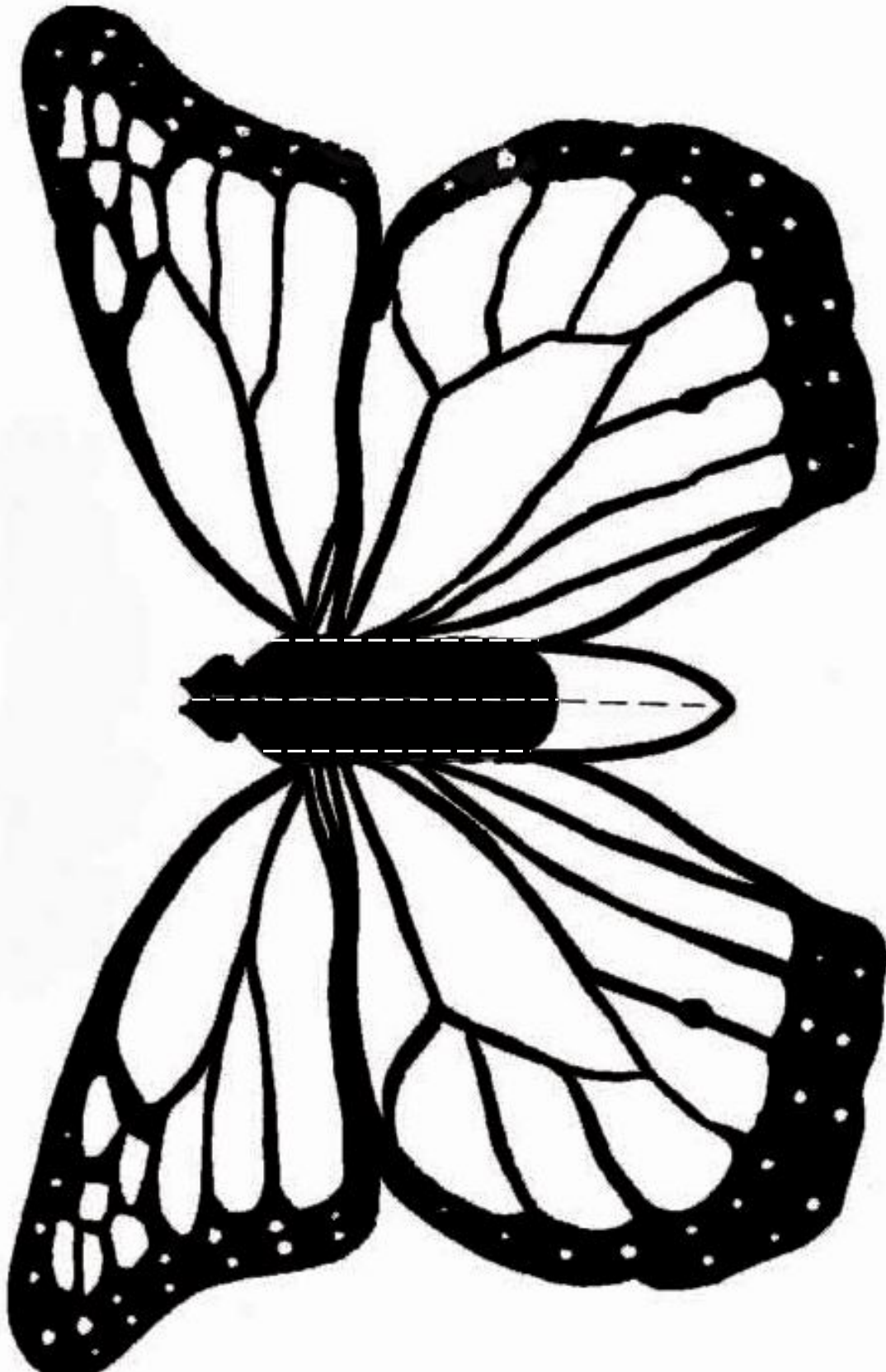


## Butterfly Airplane

Color, then cut butterfly out.

Fold butterfly on center line.

Fold butterfly on side lines.





## Fingerprint Butterflies

Press firmly for this project. Firm presses make oval shapes, gentle presses make circle shapes.

Stamp your index finger in paint.

Make one stamp on the paper at a slight angle.

Make a second stamp, overlapping the first at the opposite angle.

Stamp your pinkie or second last finger in paint.

Make a third stamp below the first at an angle downward.

Make a fourth stamp overlapping the third at the opposite angle.



With a black marker or thin paintbrush and black paint, draw a body and antenna to finish off the project.

Make Fingerprint butterflies on cards on cards or painted terra cotta pots. You can even mix egg white and food color and make them on sugar cookies!

## Handprint Butterfly

### Supplies

A few pieces of colored construction paper (stiffer paper makes a more durable butterfly)

A pencil

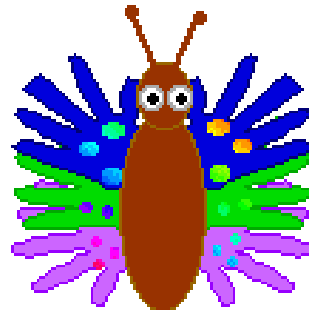
Scissors

Glue, tape or a stapler

Crayons, paint or markers

Googly eyes (optional)

A pipe cleaner



### Directions

Trace a child's hand on a few pieces of construction paper, for a total of 6 times. These will be the butterfly's wings.

Cut out the tracings.

On a piece of dark construction paper, draw a butterfly's body (draw a long oval plus a smaller circle at one end).

Glue or staple the handprint tracings to the body, three on each side. The fingers should point outwards.

Fold a pipe cleaner in half. Curl the ends a bit or wad them into balls. The folded pipe cleaner will be the butterfly's antennae.

Tape or staple the bent part of the pipe cleaner to the back side of the butterfly's head.

Either draw eyes on the butterfly's head or glue on googly eyes. Decorate the wings with crayons or markers.

## Butterfly Stained Glass Craft

### Supplies

waxed paper  
wax crayons  
manual pencil sharpener (with a fairly large hole)  
iron, ironing board and white computer paper or brown paper bag  
construction paper  
Scissors  
glue stick or white glue

### Directions

Plug in the iron and cover the ironing board with scrap paper. Set the iron to medium (no steam).

Tear a piece of waxed paper that's square (or a bit longer than it is wide) and fold it in half. Then unfold.

Take the paper off some crayons and 'sharpen' them in the pencil sharpener. Let the shavings drop onto 1/2 the waxed paper. You don't have to completely fill the space, it will spread about a bit when you use the iron. When you have a nice pile of shavings refold the waxed paper.

Fold about 1/2 inch around all the edges so none of the wax leaks out when you iron.

Place the waxed paper containing the shavings down on the ironing board and cover with more scrap paper.

Iron for a few seconds. Peek and iron a bit more if necessary. All the wax should melt. If you used multiple colors the longer you iron, the more your colors will mix.

You'll find that nothing happens and then BAM it's totally melted, so just keep waiting a few seconds at a time and peeking so you don't burn anything

Let it sit about a minute to cool.

Fold a piece of construction paper in half and then in half again.

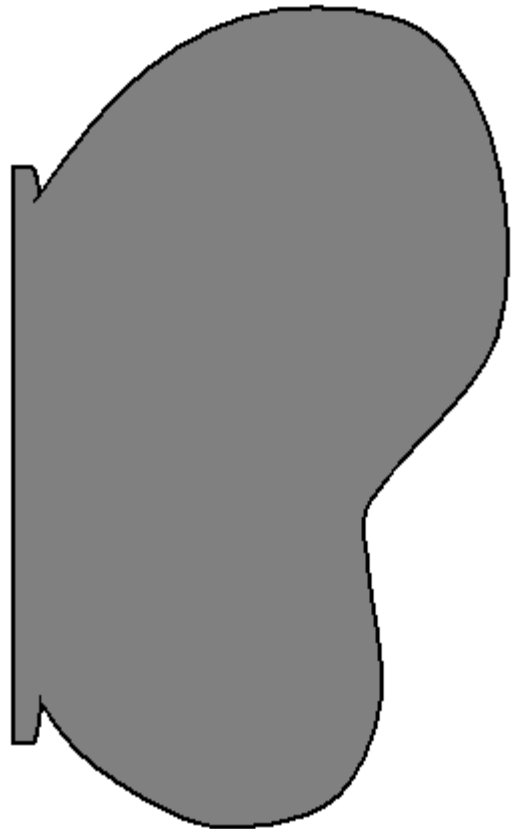
Cut out the half butterfly shape template.

Line up the flat edge of the half butterfly shape with the folded edge of the construction paper. Trace the half butterfly shape onto the construction paper. Cut out the half butterfly.

Unfold the last fold of the construction paper and you'll see the butterfly in the middle.

Unfold the construction paper again and put glue around the cut out butterfly. Put your waxed paper ("stained glass") onto the glue and cover the cut out letters.

Put glue around the cut out butterfly on the other half of the construction paper and fold it over so the 'stained glass' is sandwiched between the construction paper.



## Flutterbyes

### Supplies

Paper

Scissors

Colored translucent plastic report covers

Glue

Pipe cleaners

28-gauge wire

Fishing line

Wire coat hanger

### Directions

Start by drawing butterfly wing on a paper and cutting it out for a template. Place the template so that the straight edge is flush with the report cover fold, trace around it, and cut out the shape. Unfolded, the cutout will be a whole butterfly. Use this method to make seven more.

Cut small translucent circles of various colors and glue two onto each wing.

Wrap a pipe cleaner around the butterfly. Twist the ends of a piece of wire to the top and around the bottom of the pipe cleaner.

Tie a length of fishing line to the center of the wire on each butterfly.

Finally, shape the coat hanger into a figure eight and tie on the butterflies so that they hang at different lengths.



## Butterfly Bead Bookmark

### Supplies

50cm of wire

11 assorted beads

Glue

### Directions



Take 50cm of wire and add 11 assorted beads and secure the top bead with glue, this will become the antenna.

Twist it around to make a set of wings as shown in the pictures placing 5 beads on each loop.

Once you have the top set of wings add 11 more beads.

Bend the next set of wings by twisting it around your finger as to form smaller wings, again placing 5 beads into each loop.

Secure tightly by twisting together and finishing up with another Antenna and securing the end bead.

Add a length of wire for the book mark by twisting it into the back of the butterfly. Secure with some glue.

To finish off the butterfly glue the sequin over the wire twists in the middle.



## Paper Plate Butterfly

### Supplies

Paper Plate  
Toilet Paper Roll  
Paint  
Wiggle Eyes  
Chenille Stem  
Craft Glue  
Paint Brush  
Scissors



### Directions

Start out by painting the top side of the paper plate. Use whatever colors and designs you would like. This will be the butterfly's wings.

The toilet paper roll will be the butterfly's body. I painted mine black, but you can paint yours whatever color you like.

Cut the paper plate in half to make the butterfly's wings.

Glue the wings onto the toilet paper roll like shown in the picture.

Glue the two wiggle eyes onto the toilet paper roll.

Cut two pieces of chenille stem, about 2-inches long.

Finally, glue the chenille stem antenna onto the toilet paper roll just above the eyes. Now your butterfly is done. Display it on a table or attach it to a piece of string and hang it in a window!

## Butterfly Life Cycle Craft

### Supplies

Scissors  
Glue, tape or a stapler

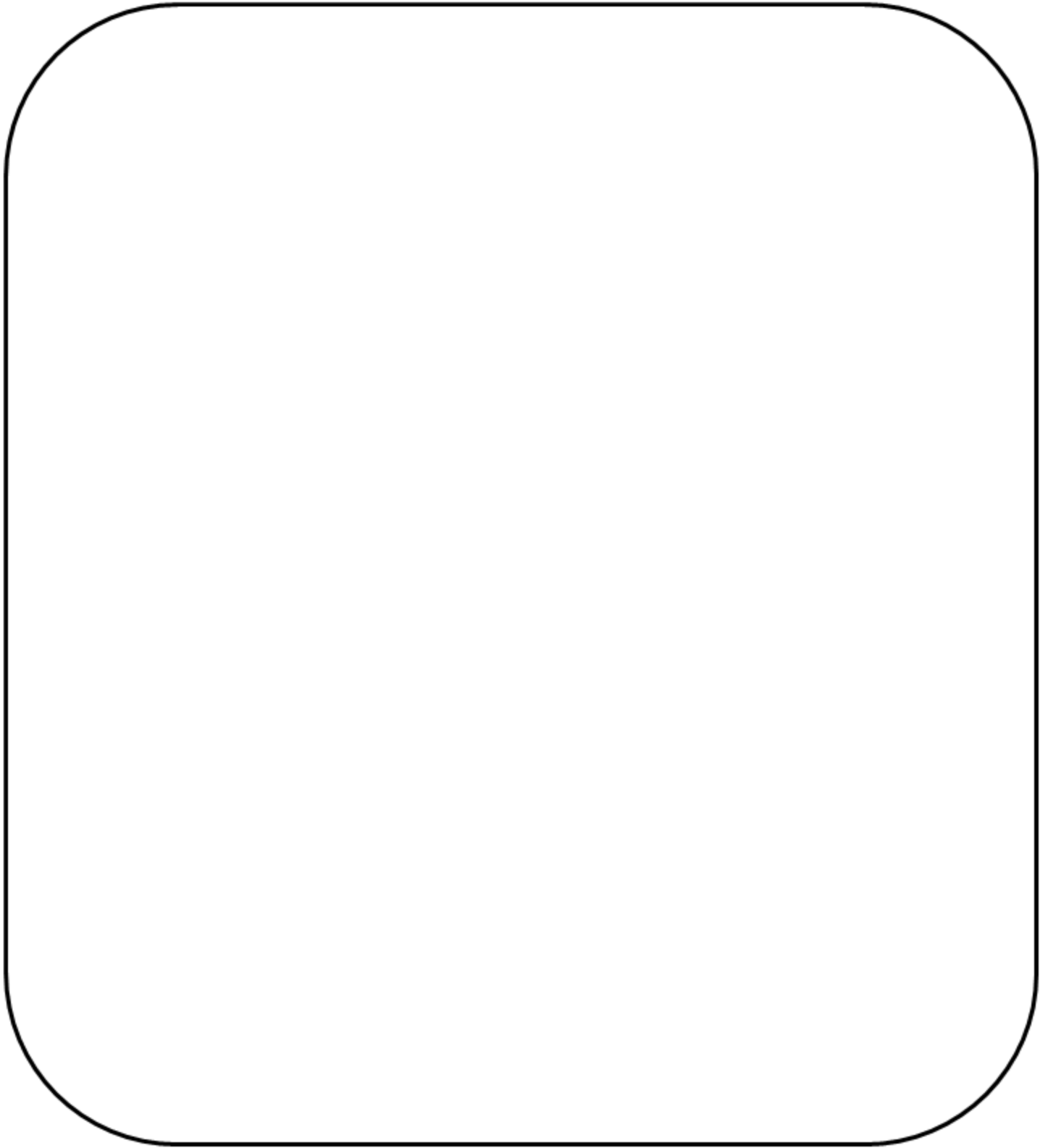
### Directions

Color the template pieces.

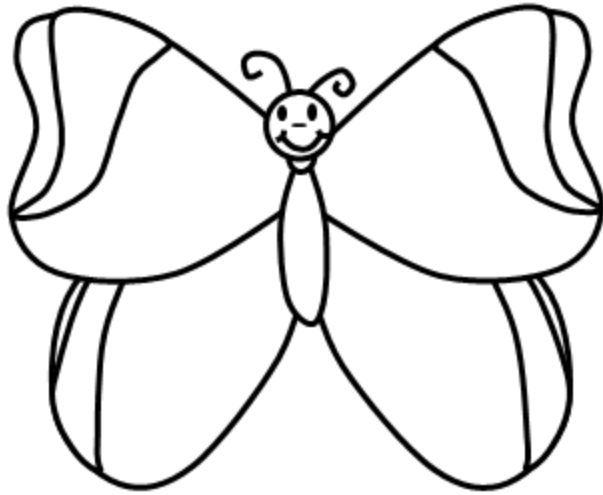
Cut out the template pieces.

Arrange the pictures and arrows to show the four stages of the butterfly life cycle.

Glue or tape the pieces onto the base.



**Life Cycle  
of a Butterfly**



From the chrysalis an (adult) butterfly emerges.

The butterfly lays eggs.

The caterpillar becomes a (pupa) chrysalis.

A (larva) caterpillar hatches from each egg.

## **Butterfly Foods and Snacks**

### **Butterfly Pretzels**

In a large bowl, soften 1 package of yeast in 1 ½ cups of lukewarm water. Add ¾ teaspoon salt and 1 ½ teaspoon sugar. Stir in 4 cups at a time. Knead to make a soft smooth dough. Do not let it rise. Cut small pieces. Give each girl a piece to roll into a long thin piece and shape it into a butterfly. Place the dough on foil- covered cookie sheets. Brush with beaten eggs and sprinkle with coarse salt. Bake at 400 degrees for 15 to 20 minutes.

Or- instead of salt, sprinkle with cinnamon sugar.

### **Easy Butterfly Pretzels**

Here's a very simple pretzel recipe. Thaw one 16oz. loaf of frozen bread dough. Roll out dough on a floured board into a 12" x 6" rectangle. Cut into 6" x 1" strips. Roll strips and shape into butterfly shapes. Beat an egg and brush it on pretzels. Sprinkle with sesame seeds. Bake on a cookie sheet at 350 degrees for 15 to 20 minutes.

## **Butterfly Treats**

### **Supplies**

candied orange slices

pretzels

canned frosting

sprinkles

licorice

gum drops

jelly beans or other candy

### **Directions**

To make the body, cut two slits in a candied orange slice.

Press one pretzel into each slit to make wings.

Spread frosting on the wings and body.

'Glue' the licorice and sprinkles to the body to form antennae and details.

Experiment with gumdrops and jelly beans to make body parts.

## **Nectar Punch**

Mix one 46oz. can of unsweetened pineapple juice, one 46oz can of fruit punch, and one 2 liter bottle of ginger ale. Chill or serve over ice.

## **Butterfly Cake**

Using your favorite sheet cake or brownie recipe, make a cake in a 9" x 13" pan. While it is cooling, duplicate and cut out the large butterfly stencil on the inside of the back cover. Place the stencil over the cooled, uncut cake. Hold the stencil in place and sift powdered sugar all around it. Remove carefully, and you have a beautiful cake.



## Butterfly Cookies

### Supplies

2 ¼ cups all-purpose flour  
¼ teaspoon salt  
1 cup sugar  
¾ cup (1 ½ sticks) butter, softened  
1 egg  
1 teaspoon vanilla  
1 teaspoon almond extract

### Directions

White frosting, assorted food colorings, colored sugars, assorted small decors, gummy fruit and hard candies.

Combine flour and salt in medium bowl; set aside.

Beat sugar and butter in large bowl at medium speed of electric mixer until fluffy. Beat in egg, vanilla and almond extract. Gradually add flour mixture. Beat at low speed until well blended.

Divide dough into 2 equal sections. Cover; refrigerate 30 minutes or until firm.

Preheat oven to 350°F. Grease cookie sheets.

Reserve 1 section; cover and refrigerate remaining section. Roll reserved dough on lightly floured surface to ¼-inch thickness. Cut out cookies using butterfly cookie cutters. Repeat with remaining dough.

Bake 12 to 15 minutes or until edges are lightly browned. Remove to wire racks; cool completely.

Tint portions of white frosting with assorted food colorings. Spread desired color of frosting over cookies. Repeat with remaining cookies.

Decorate with colored sugars, assorted small decors, gummy fruit and hard candies as desired.

Makes about 20 to 22 cookies

## Butterfly Bites

Prep Time: 5 minutes

Makes six butterflies

### Supplies

3 celery legs  
1 tbsp hummus (you can substitute low-fat cream cheese or natural nut butter)  
6 mini-loop pretzels  
3 raisins, unsulfured

### Directions

Cut each celery leg in half (so the pieces are all about three to four inches long).

Cut a small sliver off each side of each part of the celery to serve as the antennae.

Place the hummus (or cream cheese, or nut butter) into a small Ziploc bag with the corner snipped. Pipe the spread into the groove of each celery piece.

Place a pair of mini pretzels together with the round ends up, into the hummus mixture. This represents the wings.

Cut each raisin in half and place 2 pieces on one end of each piece of celery to represent the eyes.

Take the small pieces of celery and insert them above the eyes to act as the antennae.