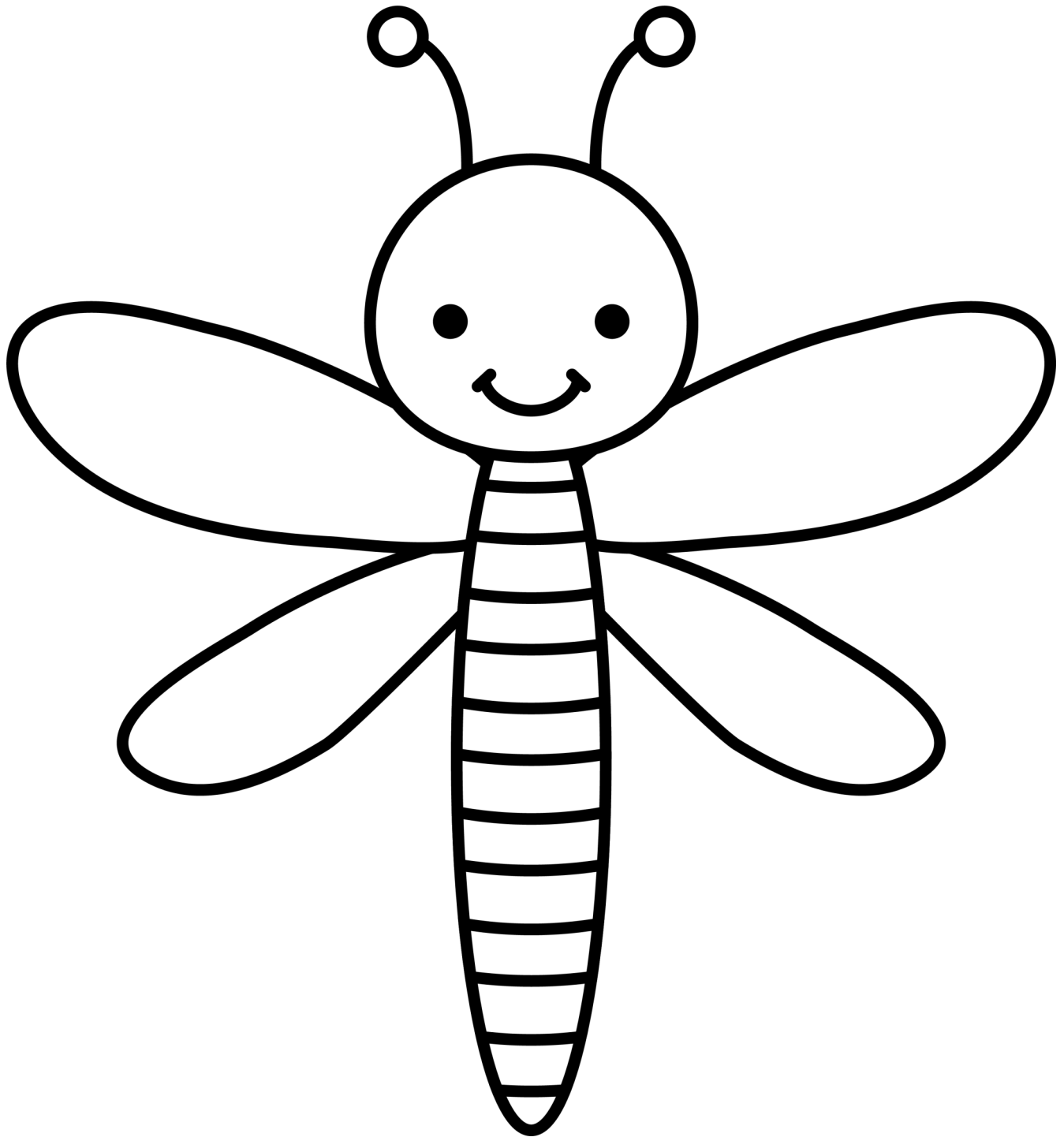


DRAGONFLY



LAPBOOK

Dragonfly Lapbook

Research by Kelly Niles

Lapbook mini-books by Ami

Classification:

Kingdom-Animalia

Phylum –Arthropoda

Class-Insecta

Order-Odonata

Suborder-Eiprocta

Infraorder-Anisoptera (dragonflies)

Infraorder- zygoptera (damselflies)

Family- 10 or 11 families, which change as more is learned about dragonflies:
Aeshnidae (Darners), Corduliidae (Emeralds), Gomphidae (Clubtails), Libellulidae (Skimmers), Macromiidae (Cruisers), Petaluidae (Petal tails), Chlorogomphidae (tiger bodies), Neopetaliidae (red spots), Cordulegastridae (spiketails), synthemistidae (southern emeralds)

→ Complete Classification Accordion

Vocabulary:

Exoskeleton- external skeleton

Molt- shedding of old exoskeleton

Carnivore- an animal that eats meat

Habitat- the environment in which and animal lives

Hover- to hang fluttering or suspended in the air

Larva(e)- the immature, wingless, feeding stage of an insect that undergoes complete metamorphosis.

Spiracles- the holes on the sides of a dragonfly's body through which it breathes

Aquatic- living or growing in water

Oviparous- Producing eggs that hatch outside the body

Thorax- (in insects) the portion of the body between the head and the abdomen

→ Complete Dragonfly Dictionary

Mapping: Where Dragonflies Live in the World

Dragonflies are found on all continents except Antarctica and are concentrated in warmer, tropical habitats. There are 5,000 identified species in the world. 450 species exist in North America, while only 38 species exist in Great Britain.

→ Complete All Over the World

Dragonfly Habitat:

Dragonflies can be found near ponds, lakes, swamps, slow streams, pools of rivers, and any slow moving water. Most prefer fresh water, but at least one species breeds in brackish or salt water. Many species can be found in desert areas near pools of water.

→ Complete Habitat Circle Book

Dragonfly Anatomy:

Colors-

Dragonflies come in a wide array of colors including, but not limited to, red, fuchsia, orange, blue, gold, black, emerald, maroon, as well as metallic colors.

Body-

Dragonflies have a head, thorax, and abdomen. Compound eyes, small antennae, and mouthparts are on the head. Six legs and two sets of wings are attached to the thorax. The elongated abdomen has ten segments, but varies in shape depending on species. Some may have a club-shaped abdomen or a spike on the tail. The 'pinchers' at the end of males' tails are claspers that grasp the head of a female during mating. Dragonflies do not sting, as was once commonly thought.

→ Complete Dragonfly Diagram

→ Complete Dragonflies by Design

Wings-

Dragonfly wings can be colored, spotted, banded, or even clear. Dragonflies have 2 pair of wings, with longer front wings and shorter back wings. Damselfly front and back wings are the same shape and size. Veins crisscrossing the wings give the appearance of being mesh. Unlike other insects, dragonflies can flap or beat their wings independently, so the front wings can be flapping up while the back wings are flapping down. Dragonflies are excellent fliers and can loop-the-loop, hover, and even fly backwards. They beat their wings slowly compared to other insects- only 30 beats per second. Larger dragonflies can reach short bursts of speed of 30-36 mph. Dragonflies are strong, capable fliers and can cover long distances in search of water. Huge fossil dragonflies have been found with wingspans of 27 inches. The largest dragonfly in North America is the Giant Darner, with a 6” wingspan.

→ Complete Largest/Smallest Shuttertied

Legs –

Adult dragonflies do not walk. They use their legs for perching, landing and catching prey. When in flight, the legs bend together in a forward position, forming a ‘basket’. Dragonflies catch their prey in flight using their legs as a trap. When at rest, dragonflies sit with their bodies straight out. This is because their legs are in a forward, and not down, position.

Eyes –

Dragonflies and dragonfly larva have compound eyes made up of numerous single, or simple, eyes that function together as a unit. Adult dragonflies have excellent eyesight, which is why it is so difficult to catch one. Sight is a dragonfly’s primary sense. It does not rely as much on touch or hearing.

Breathing –

Dragonflies breathe through holes on the side of their bodies called spiracles.

Dragonfly Reproduction and Life Cycle:

Mating –

Male dragonflies grasp the back of the head of female dragonflies with their claspers, and the female bends her abdomen around to the male, forming a ‘wheel’. Dragonflies hunt and mate during the day. They are not active at night. They cannot see well at night. Males of some species are territorial, chasing other

males out of the area they are guarding, which usually encompasses some water. The males mate with any females that enter their territory.

How Dragonflies Lay Eggs -

Dragonflies are oviparous, as are all insects. Males may fly in tandem with the female as she lays eggs, or may guard the area from other males trying to mate with her, depending on the species. Some species lay eggs on water plants. Female darners have a saw-like ovipositor that can dig into plant stems or even dead wood, so she can deposit her eggs in a protected area. Other species lay their eggs in water or mud. Fish are attracted to the ripples dragonflies make on the water when depositing their eggs, so one species dips her abdomen into the water and shoots her egg in another direction so it can settle elsewhere unharmed.

Dragonflies can lay hundreds or even thousands of eggs at a time. Some dragonfly eggs hatch in as little as five days, while others over winter in the water or mud and hatch the following spring.

Dragonfly larvae -

Some larvae are entirely aquatic, living at the bottom of ponds or marshes. Others can leave the water in search of food, while still others live the entire larval stage on land! The larva must shed its old exoskeleton and make a new one. The number of times a larva molts depends on its species, but 12 is the average number of times. Like the adults, larvae have three main body parts, a head, thorax, and abdomen.

Damselfly larvae have three rear gills that look like tails. Dragonfly larvae breathe through gills in their bottoms! Dragonflies can remain in the larval stage for months, or even years. Once they become an adult dragonfly, they live for 4-6 weeks. Damselflies live only 1-2 weeks.

After final molt, emergence begins. The larva crawls out of the water, usually in the evening, onto a rock, leaf, or tree. The dragonfly breathes in air, causing the exoskeleton to split open. The adult pushes out of the old skin, head first and then abdomen. Hemolymph (blood) fills the wing veins. Then the veins harden. The dragonfly is ready to fly away at sunrise. The process can take several hours.

Dragonflies are very vulnerable during the emergence stage and make easy prey.

Videos of dragonfly larva attacking and eating and also dragonflies emerging can be found on YouTube.

→ Complete Stages of Life Flap

→ Complete Dragonfly Matchbooks

Dragonfly Migration:

Some species do migrate, but little is known about their migration patterns. What a fascinating area of study for a future entomologist!

Dragonfly Diet:

What dragonflies eat –

Dragonflies are carnivores, both as larvae and an adult. Adults eat mosquitoes, flies, other dragonflies and damselflies, butterflies and moths, and other insects, including bees and wasps. Dragonfly nymphs (larvae) eat mosquito larvae, other dragonfly larvae, tadpoles, and other insect larvae. Sometimes adult dragonflies can be seen swarming in large numbers. This is thought to be a feeding frenzy, and not a mating ritual. Dragonflies hunt during the day, and not at night.

How dragonflies eat –

Some adult species catch and eat their prey in flight. Others utilize an ambush technique, perching on a branch to watch for prey to fly by, and then darting out to capture it. Dragonflies and damselflies catch their prey with their legs, which bend together to form a basket or net. They can bite off the legs and wings of prey to prevent it from escaping. The mandibles slice the prey into small pieces that can then be swallowed.

Dragonfly larvae have a hinged apparatus that can be jet propelled 5 times the length of the larva to grab a prey item and bring it back to the jaws.

→ Complete Table Manners

Predators of Dragonflies:

Fire ants and night-feeding birds, among other creatures, eat dragonflies during the emergence stage. Birds, large spiders, robber flies, other dragonflies, and frogs eat adult dragonflies. Water beetles, diving ducks, fish, and people eat dragonfly larvae.

Some Asian cultures eat dragonfly larva as a delicacy. In Western culture, they are sometimes called 'mudeyes'. People catch them and keep them in tanks as fish bait.

→ Complete Food Chain Tri-fold

Extinct or Endangered Dragonflies:

Some species of today's dragonflies are at more risk than others due to less available habitat or polluted waters. If you would like to create a dragonfly habitat in your backyard, all you will need is a dish or a small wading pool with water and rocks or plants in or near the water onto which the emerging dragonflies can crawl. Dragonfly larva can be caught out of a nearby pond and raised in an aquarium. Be sure the aquarium also has something onto which the emerging dragonfly can crawl. Adult dragonflies cannot be kept successfully in captivity and must be released immediately.

Dragonfly Myths and Folklore:

Some cultures valued dragonflies, while others saw them as evil. In Japan, dragonflies were a welcome sign of a good rice harvest. They were also believed to bring good luck in battle. An old name for Japan, Akitsu-shimu, means Dragonfly Island.

Some Native American people viewed dragonflies as a symbol of life or purity.

In medieval times in Great Brittan, dragonflies were considered evil and dangerous. They were given names like 'horse-stingers' or 'devil's darning needles'.

In the United States today, dragonflies are sometimes called 'snake doctors' or 'mosquito hawks'.

Some people still mistakenly believe dragonflies will sting. They cannot. They may bite if they are caught, but the bite cannot break the skin and is not painful.

→ Complete Folklore Shutterflap Book

→ Complete True or False? Mini-books

Dragonfly vs. Damselfly: The differences between the two

Dragonflies and damselflies are in the same order, but they have distinct differences. Damselflies have a slenderer body, and hold their wings over their bodies when at rest. The damselfly's eyes are also farther apart on their heads. Dragonflies are larger, more heavy-bodied, and hold their wings straight out at their sides when at rest. Dragonfly eyes are larger and closer together, sometimes even touching. Dragonfly front and back wings are different, while damselfly wings are all the same size.

→ Complete What's the Difference? Flap

Dragonflies in Poetry:

Dragonflies are sometimes the subjects of English poetry and Japanese haiku. Use one of the poems below as copy work and illustrate it for your lap book. You may find another dragonfly poem that speaks to you. Try writing your own dragonfly poem or haiku.

The Dragon-fly by Alfred Lord Tennyson apparently from ``The Two Voices''

Today I saw the dragon-fly
Come from the wells where he did lie.
An inner impulse rent the veil
Of his old husk: from head to tail
Came out clear plates of sapphire mail.
He dried his wings: like gauze they grew;
Thro' crofts and pastures wet with dew
A living flash of light he flew.

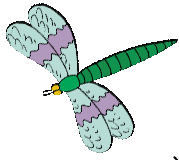
In its eyes are mirrored
far-off-mountains
Dragonfly!
-Issa

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How many species
live in the
United States?

How
many species
live in Europe?



All Over the World

BACK

COVER

Indicates valley
fold.

Indicates moun-
tain fold.

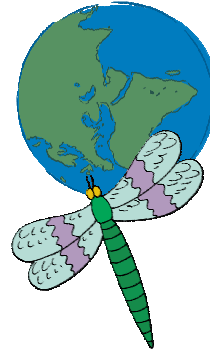
For best results,
use heavy paper
or light card-
stock.

Cut on solid
lines; fold on
dotted lines.

Triangle window book with 4 windows.

Which continent is
not inhabited by
dragonflies?

Where
are the most
dragonflies located?

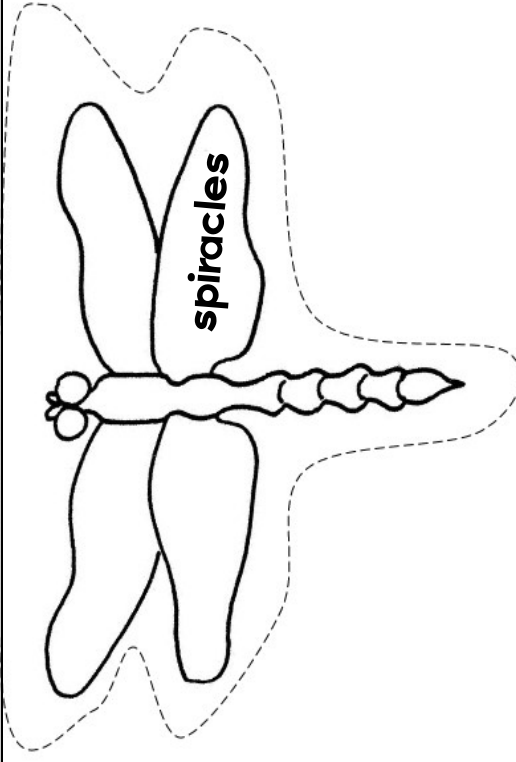
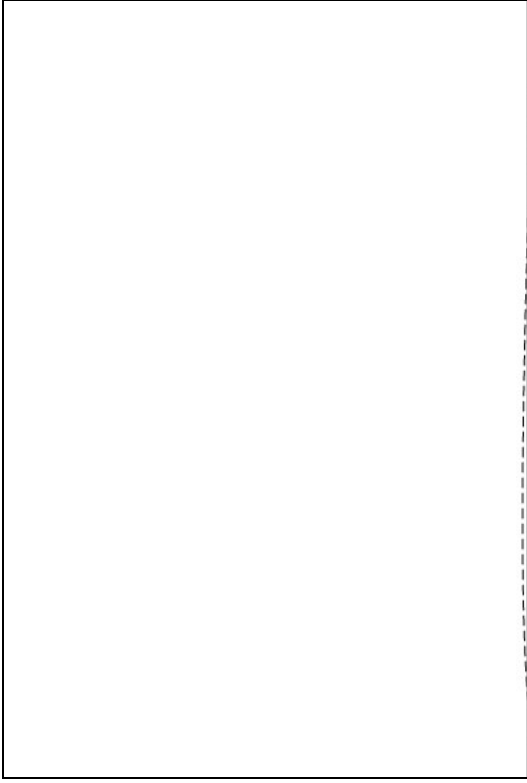


PAGE 2

GLUE THIS PAGE
TO INSIDE OF
COVER/BACK.

Indicates valley
fold.

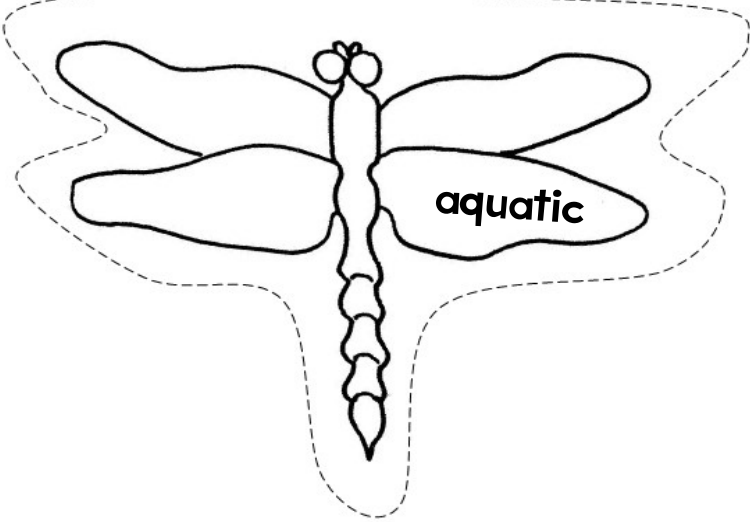
PAGE 1



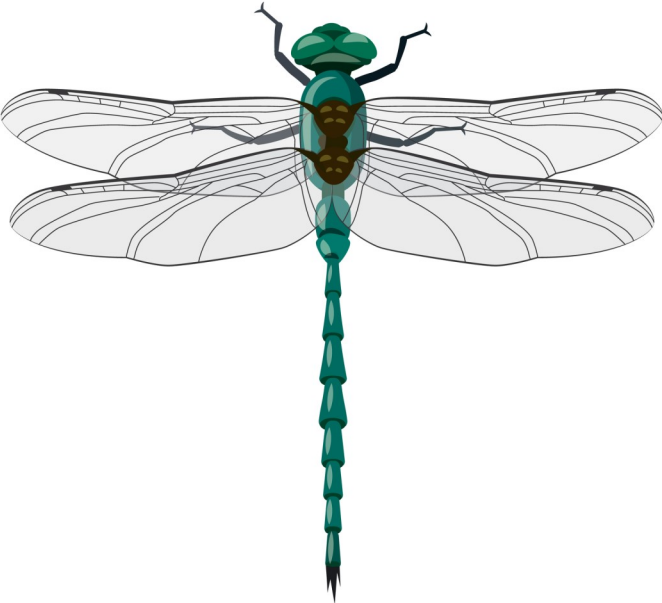
Fold a piece of 8.5 x 11 inch paper in half like a hotdog (vertically). This is your cover book. Set aside.

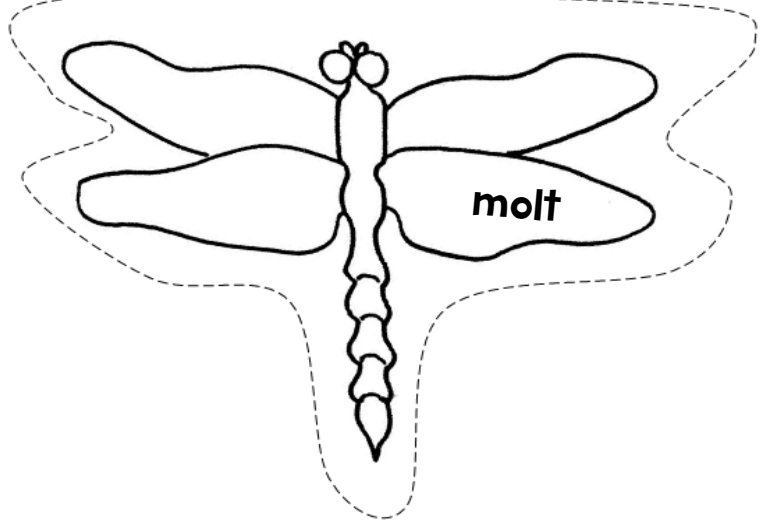
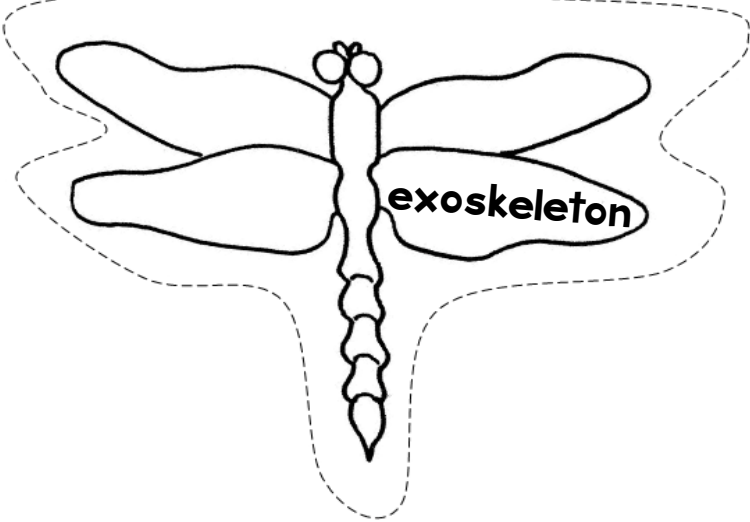
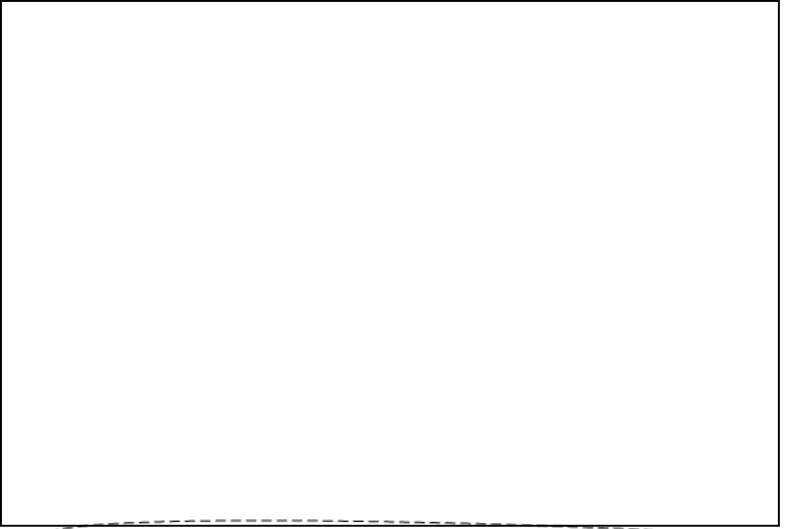
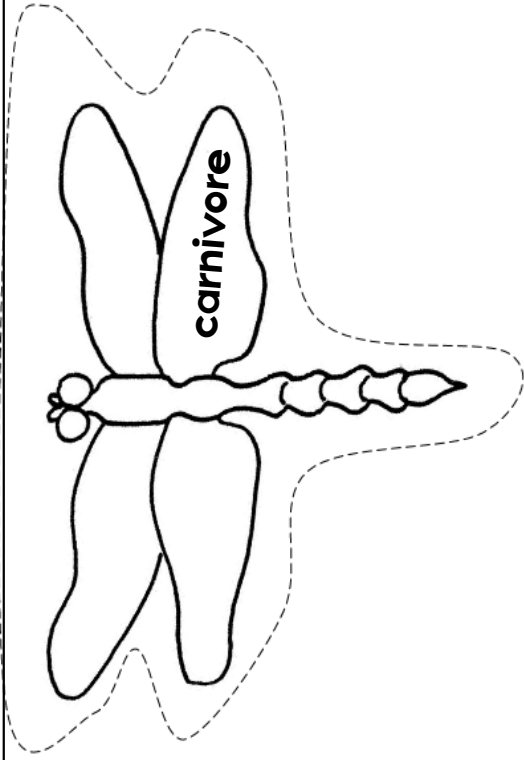
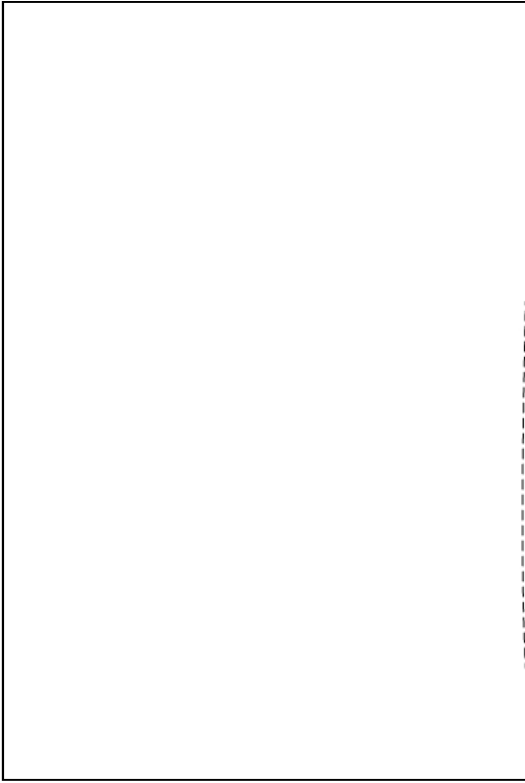
Cut out each dragonfly book. Fold in half and cut around dragonfly shape. Write definitions inside the words.

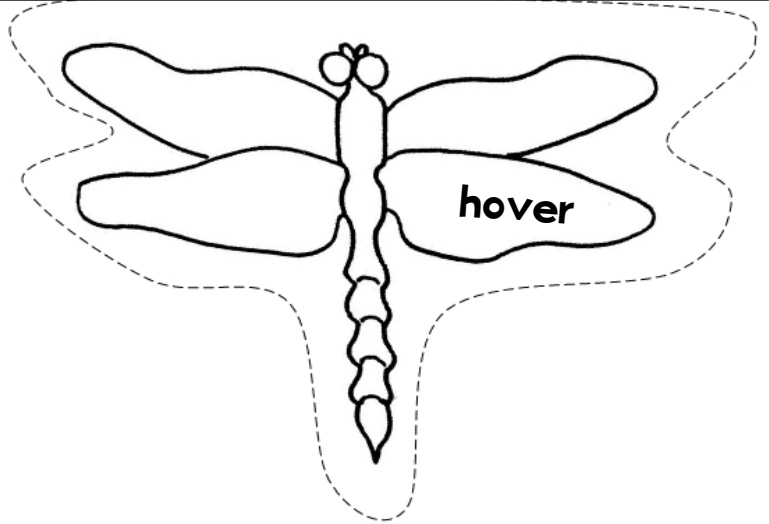
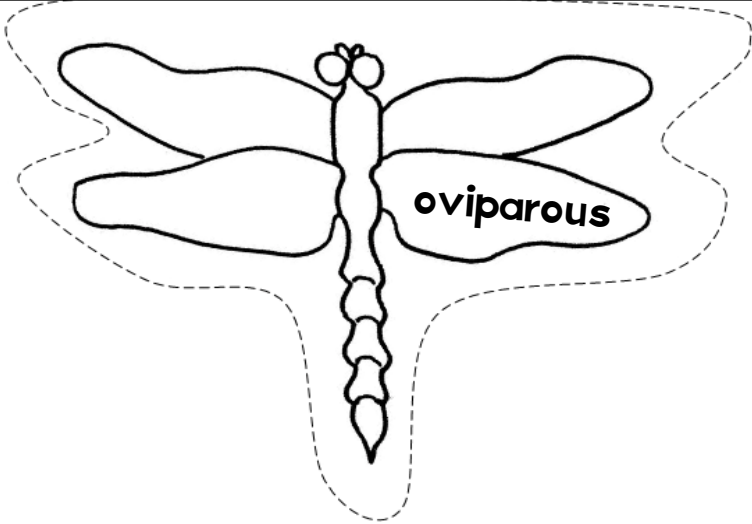
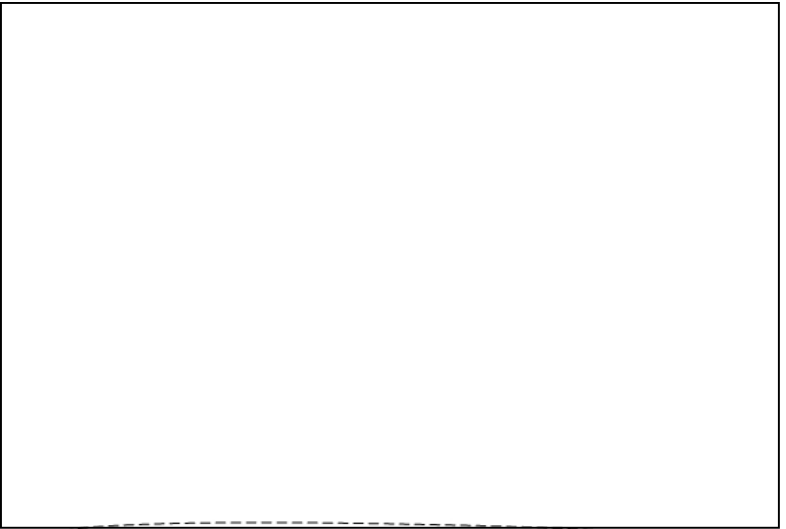
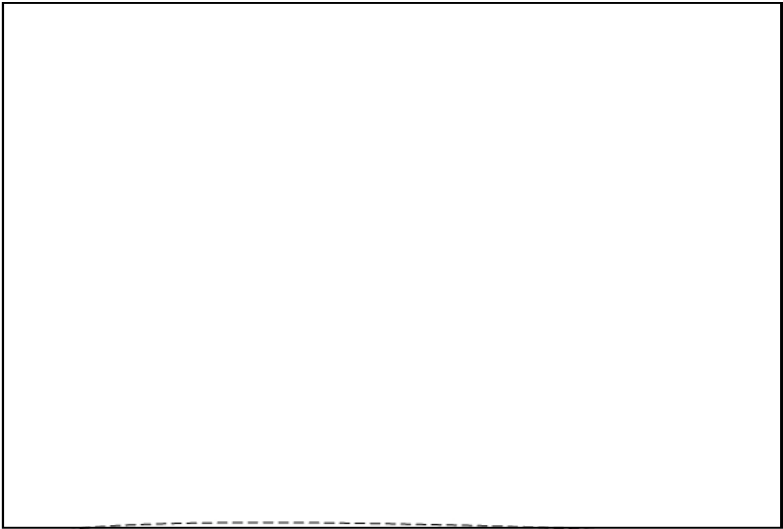
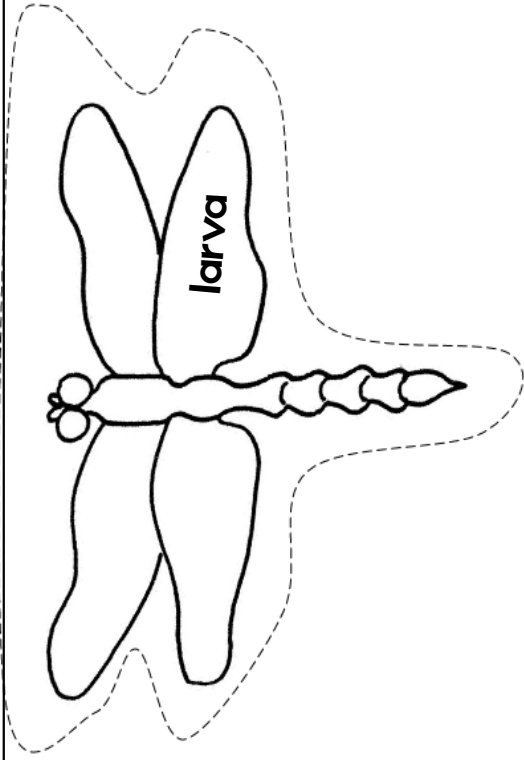
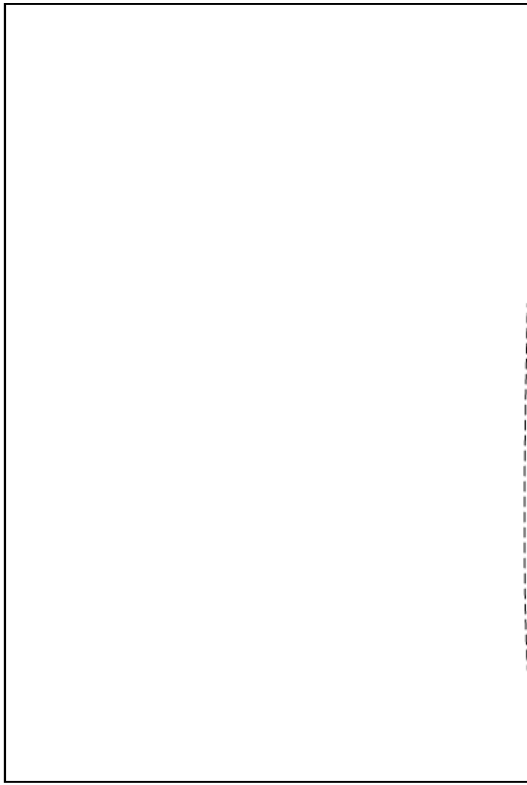
Open your folded cover book. Paste the back of four dragonfly folds on each side of the book.



Dragonfly Dictionary





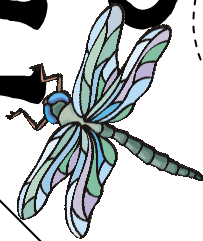


Cut each book out as one piece (two total). Fold tri-fold style. Write the truth under the flap with the statement.

Dragonflies
sting
people.

Dragonflies
can fly
backwards.

TRUE



OR

FALSE

TRUE



OR

FALSE

Cut book out as one piece. Fold in half.

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Table Manners



How Dragonflies Eat



Cut out book as one piece. Fold left side in. Fold right side in. Open book. Cut on dotted line to form four flaps. Refold book.

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EGG

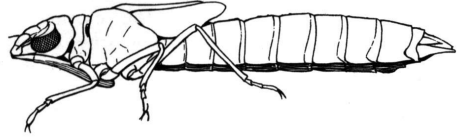
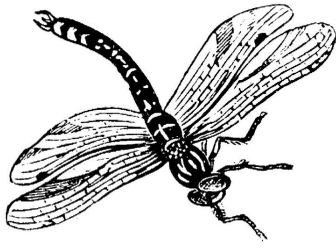
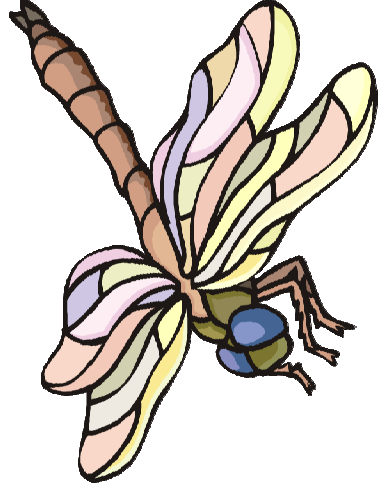
LARVA

ADULT

STAGES

OF

LIFE



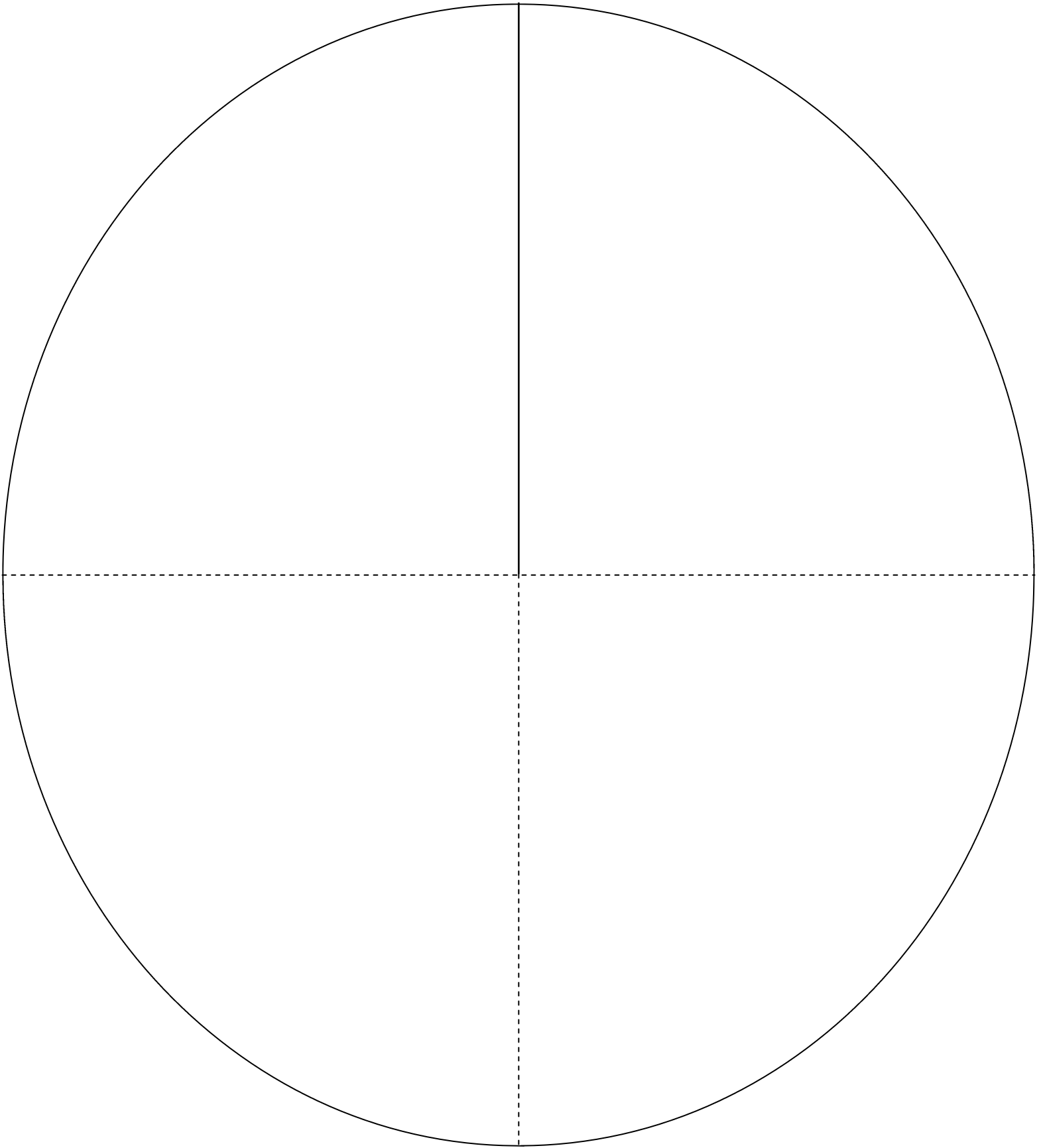
Print onto card stock and cut out. Punch holes where indicated. Fold on dotted lines. To secure book, string a ribbon through the holes and tie with a bow on the front.

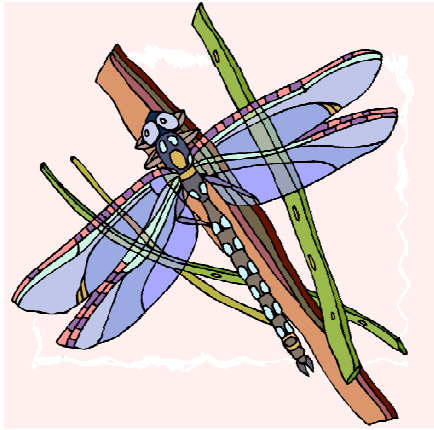
Inside the book write about the largest and smallest dragonflies.

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Cut on solid lines. Fold on dotted. Use with images on the next page.





Follow instructions in circle book file. Use this book to record the various places (pond, lake, swamp, etc.) where dragonflies live.

Have your student write and illustrate one answer on each section. Write habitats on the front of the book and add graphic to the front or have student draw his own dragonfly.

Other images in this file can be used to decorate your lapbook as desired or to make more minit books.

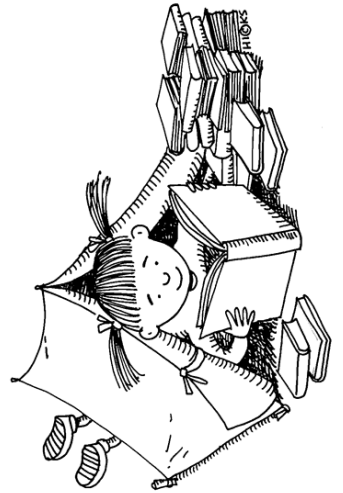


Cut book out as one piece. Fold side shutters to under. Fold cover down. On the inside of the favorably shutter, list cultures who have viewed dragonflies favorably. Do the opposite on the other side. Paste map in book (in the center) Color favorable areas one color and unfavorable areas another color.

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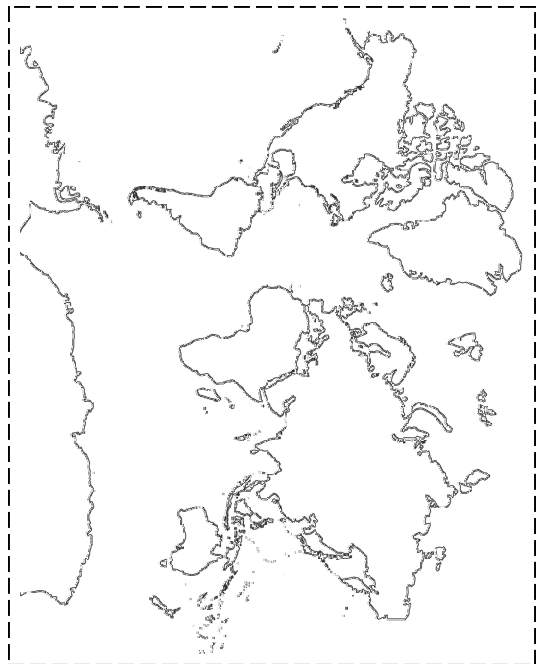
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Dragonfly Folklore



Which areas of the world viewed dragonflies favorably?

Which areas of the world viewed dragonflies unfavorably?

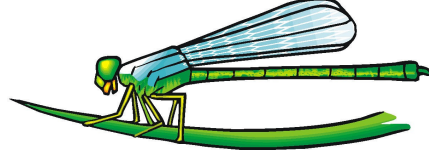


What is a
Dragonfly
?

What is a
Damselfly
?

Cut book out as one piece.
Fold top under. Fold bottom
under. Open book. Cut on
solid black lines to form two
flaps. Refold so that the
cover is on the front.

What's the
Difference?



Cut out as one piece. Glue as indicated. Fold on dotted lines like an accordion (back and forth, back and forth. Glue back of last piece in your lap-book. If desired (before you glue), tie a ribbon with the bow in the front around the book. Then, paste the back to your lapbook. You can tie/untie the ribbon to close/open the book.

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Order

Other animals in this order

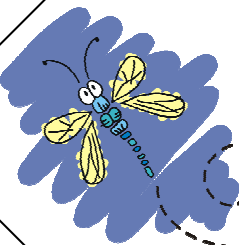
Class

Other animals in this class

Phylum

Other animals in this phylum

Kingdom



CLASSIFICATION

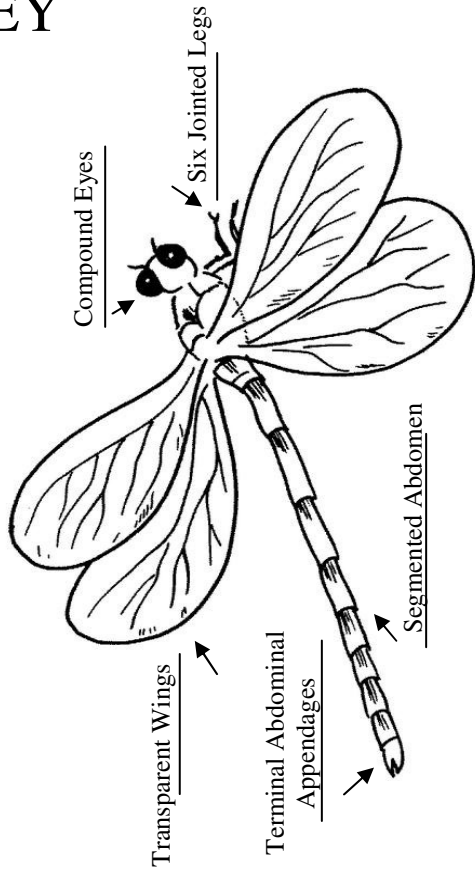
Infraorder

Suborder

Other animals in this order

Glue this piece to the back of the last piece on the first strip.

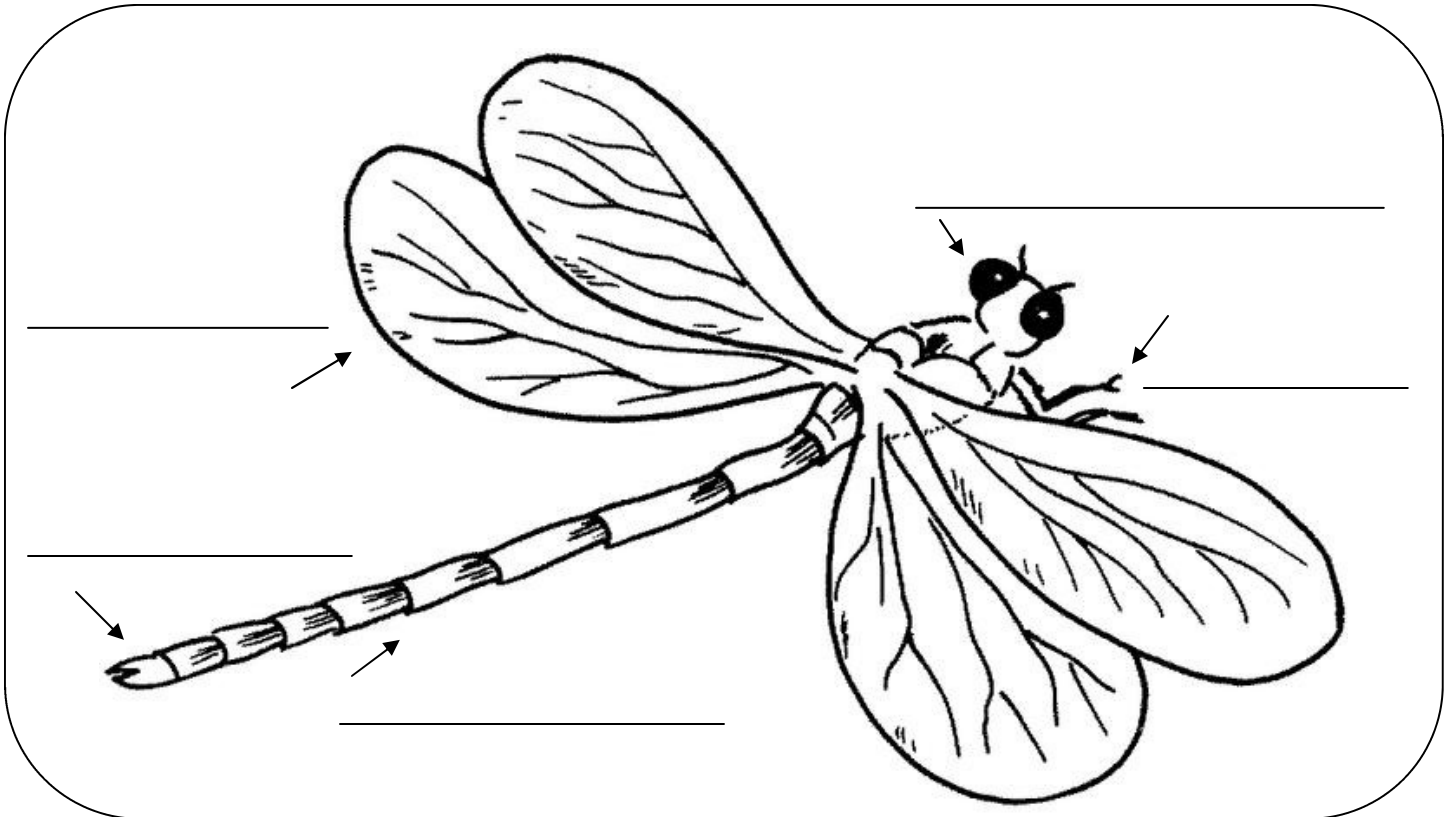
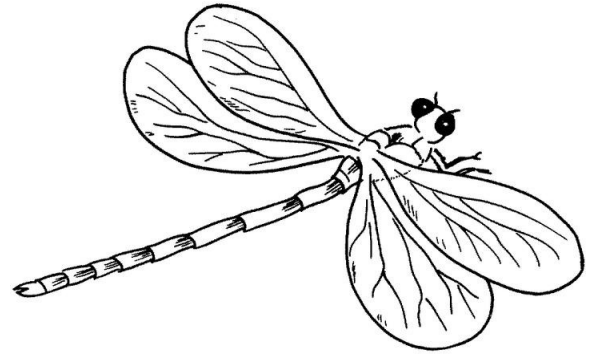
KEY



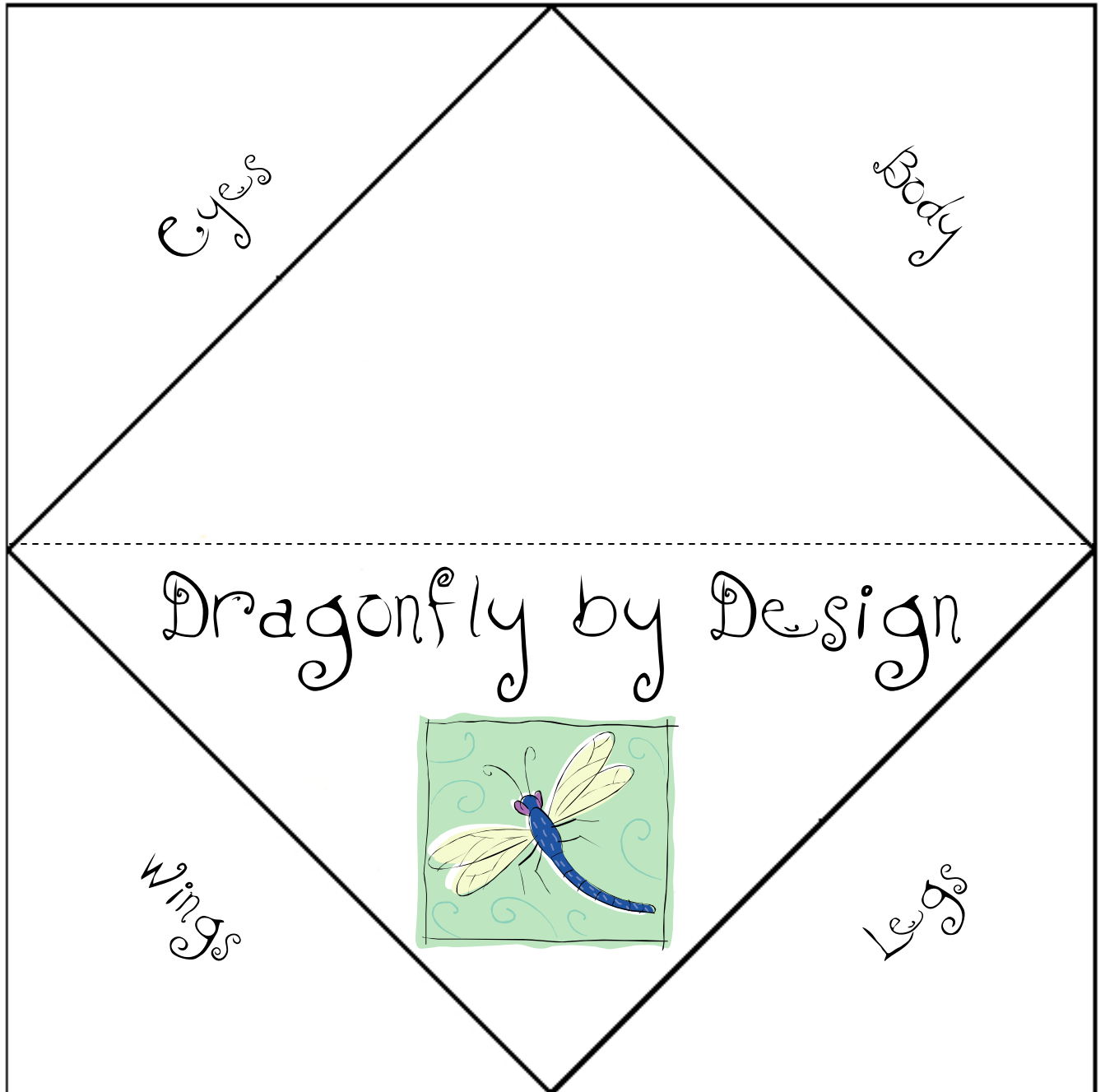
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Cut book at the bottom of page out as one piece. Fold in half. Cut and paste cover piece to the front, if desired.

Dragonfly Diagram



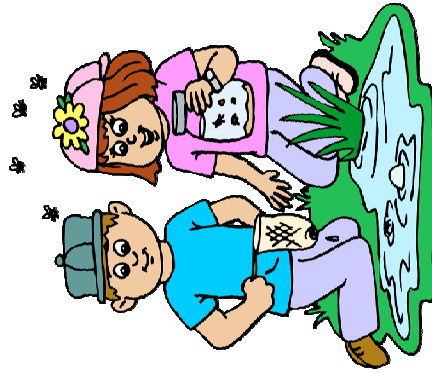
Cut out book. Fold each triangle flap under. Fold book in half on dotted line. When you open the book, there should be four flaps to life and record information.



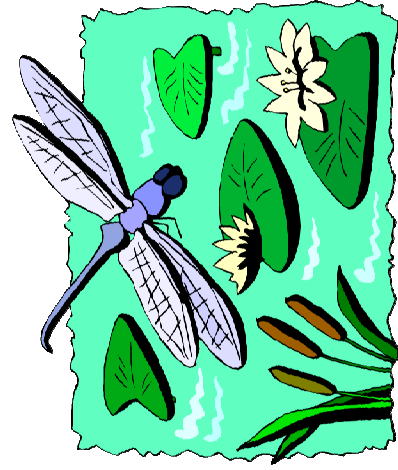
Cut on solid lines. Fold on dotted lines (matchbook style).

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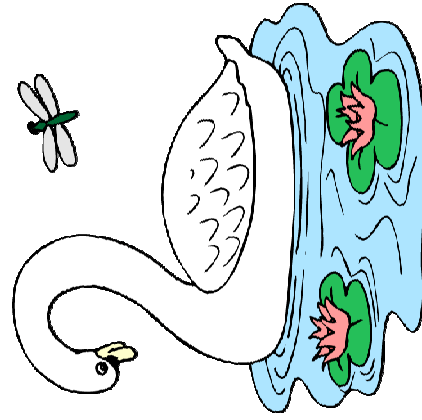
What is an entomologist?



When do dragonflies hunt?



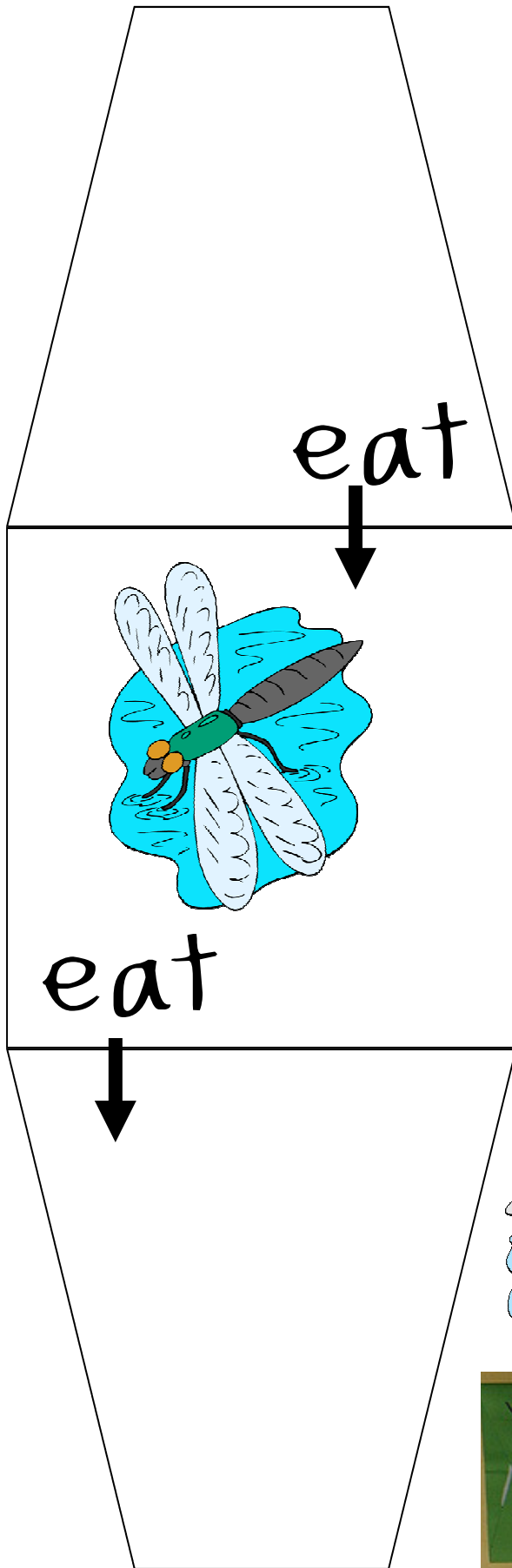
How long do dragonflies live?



You are looking at the inside of the book. Cut out cover pieces and paste on appropriate parts of the book (or have your student write titles for the covers).

Write examples on each section.

The example below shows penguins, but this book is for dragonflies.



What
Eats
Dragonflies...

What
Dragonflies
Eat...

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