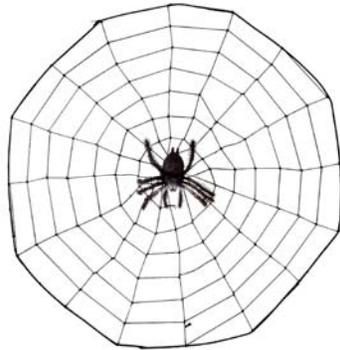


Spiders: Spooky or Cool?

Student Booklet



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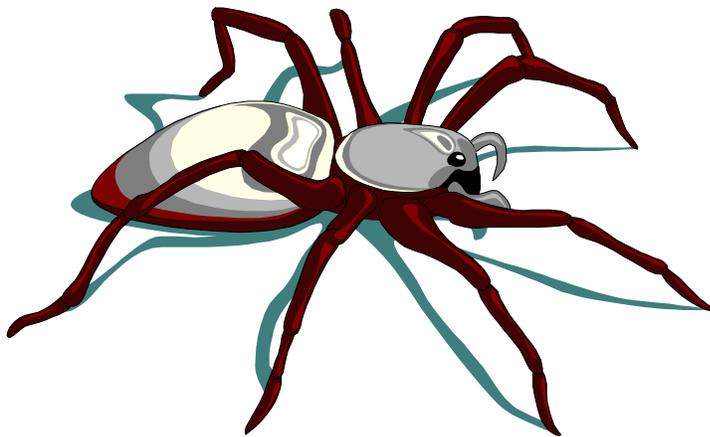
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Preface

Spiders make up the largest group of arachnids. Despite the handful of poisonous species, many spiders are harmless contrary to fears and beliefs. Although the mere presence of spiders and their webs can be a nuisance, they are beneficial because they prefer to feed on harmful insects (such as flies) and mites.

Spiders are often called insects or "bugs," but they are actually quite different and the distinction between the two and among common species should be known. Some examples of different types of spiders include: the black widow, brown recluse, sac spiders, tarantulas, jumping spiders, wolf spiders, and orbweavers.

In this booklet are a variety of exercises designed to help you learn more about spiders and way they may be beneficial or harmful.



Tables of Contents

Preface	Page 1
Lesson 1 – What is a Spider?	Page 3
Activity 1-1 – Spiders vs. Insects	Page 6
Activity 1-2 – Arthropod Body Parts Matching Game	Page 8
Lesson 2 – Beneficial and Harmful Spiders	Page 10
Activity 2-1 – Harmful and Beneficial Spiders	Page 13
Activity 2-2 – Harmful and Beneficial Spiders Matching Game	Page 14
Lesson 3 – Spider Lifecycles	Page 19
Activity 3-1 – Spiderling Maze	Page 21
Activity 3-2 – Ballooning Spiderling Kite	Page 22
Lesson 4 – Harmful Spiders	Page 24
Lesson 4-1 – Arachnophobia	Page 25
Lesson 4-2 – Black Widow Spiders	Page 26
Lesson 4-3 – Brown Recluse Spiders	Page 27
Activity 4-1 – Harmful Spider Word Find	Page 28
Activity 4-2 – Spider Matching Game	Page 29
Wrap Up Crossword Activity	Page 32
Wrap Up Word Search Activity	Page 34
Spider Placemat	Page 35
Teacher’s Glossary	Page 36

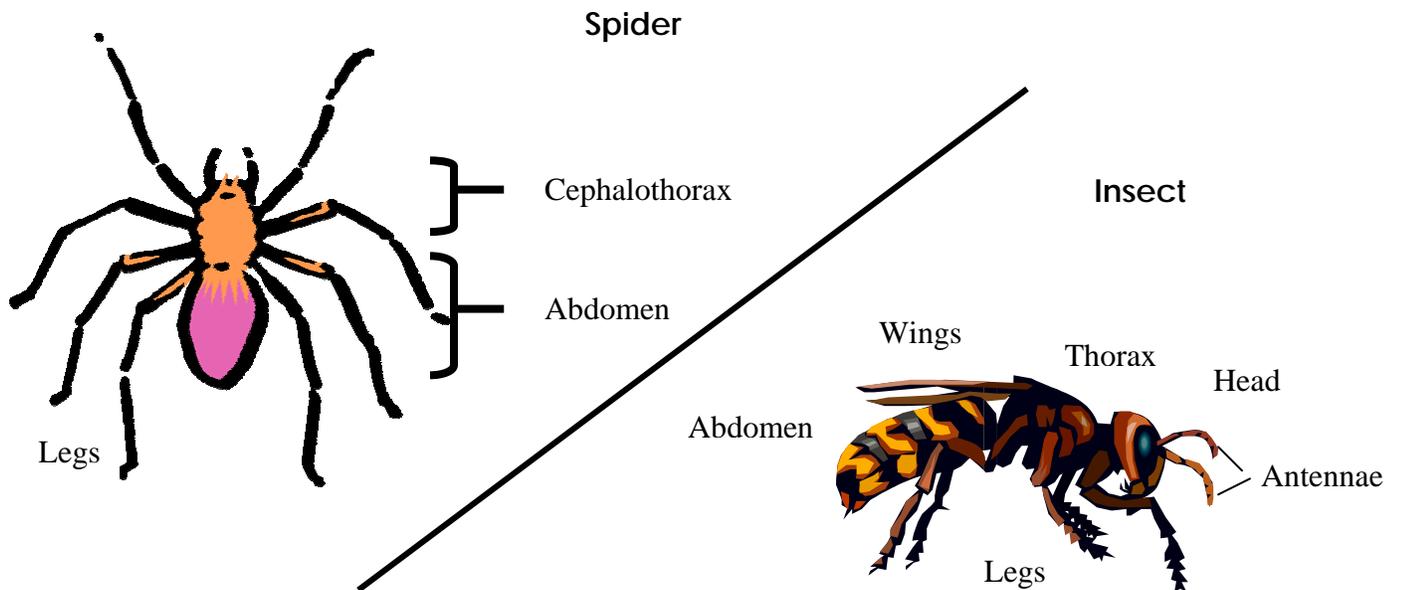
Lesson 1 – What is a Spider?

Glossary Words
Abdomen
Arachnids
Cephalothorax
Chelicerae
Palps
Predators

Reading Exercise

There are about 35,000 species of spiders in the world and about 3,000 are found in North America!

Spiders are NOT insects, they are **arachnids**. There are many differences between spiders and insects. Spiders have 8 legs. All arachnids have 8 legs. Insects only have 6 legs. Insects have three body parts – a head, thorax and abdomen. Spiders have two body parts. Their head and thorax are fused to make **cephalothorax**. The cephalothorax is where the spiders' eyes are found and the legs are attached. The hind end of a spider is called the **abdomen**. The abdomen is where spiders spin silk. Spiders are also missing two things that insects usually have. Spiders never have antennae or wings.

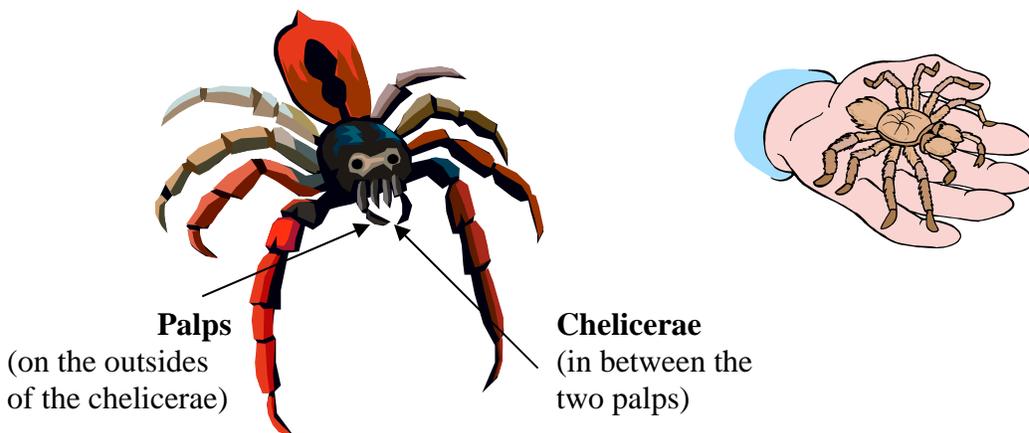


Spiders may be all sizes and colors, but all spiders are **predators**. This means that they eat other animals. Spiders can eat animals as big as birds, lizards, and mice! The spider's favorite food is insects.

When spiders catch their food, they use fangs called **chelicerae** (cha-lis-er-ey), found below their eyes on the cephalothorax. Fangs have venom that paralyze the prey and helps digest their food to make it easier to eat. Most spiders also have **palps** that help the spider feel and taste.

Spiders help catching their prey because they usually have 8 eyes and hairs all over their body. These hairs help them feel when their prey is near.

Even though spiders can be scary, only a few types can hurt you. But, remember, all spiders can bite and if they feel scared, they may attack. Never squeeze a spider, corner them, or poke at them. Be careful with spiders and they will be careful with you.



Wrap Up Questions for Lesson 1:

Is a spider an insect?

What are the body parts of spiders? Cephalothorax and abdomen

What are the main differences between spiders and insects?

What is the favorite food of most spiders?

Activity 1-1: Spiders vs. Insects

Match the following body parts to the correct arthropod. Some words may be used more than once

Word Bank		
Abdomen	Chelicerae	Palps
Antennae	Head	6 Legs
Cephalothorax	Thorax	8 Legs

Insect

1. _____
2. _____
3. _____
4. _____
5. _____

Spider

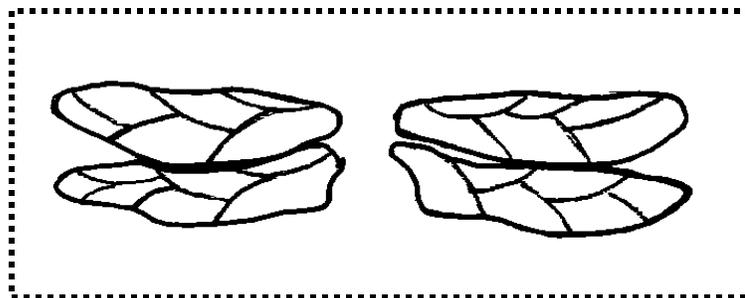
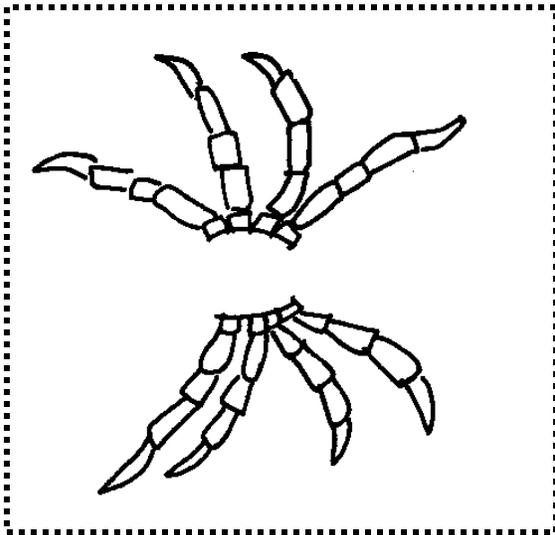
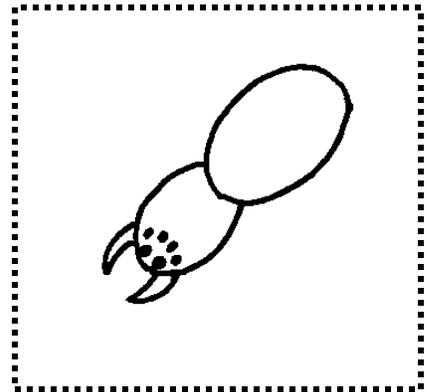
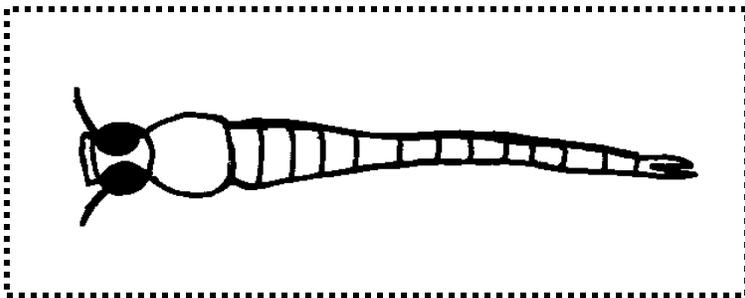
1. _____
2. _____
3. _____
4. _____
5. _____

Activity 1-2: Arthropod Body Parts Matching Game

Cut out the following body parts and glue them together to make a spider and an insect. Start by dividing the body parts into piles: one for insects and one for spiders.

After you have glued or taped your body parts together, label them with the correct terms:

Abdomen, Antennae, Cephalothorax, Chelicerae, Legs, Thorax, Wings



Lesson 2 – Beneficial and Harmful Spiders

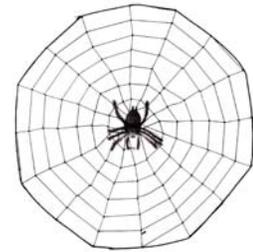
Reading Exercise

Spiders are found all over the world and can be good or bad. Most people think spiders are bad, but spiders can be very good or beneficial!

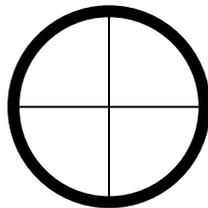
How are spiders beneficial?

Spiders are an important part of the food web. They are food for birds, wasps, lizards, and many other animals. Without spiders, those animals would be hungry!

Spiders love to eat insects, and this is why they are so beneficial. Without spiders eating insects there would be too many harmful insects in the world. Spiders are good to have in the garden, yard and even in the house because they eat all the bad insects.



Spiders are also good because of the silk that they spin. Spider silk is very strong and humans use it for fishing nets, lures, bags, and even cross hairs in telescopes. We also use spider cobwebs as bandages for wounds. Some people believe cobwebs and silk can clot blood and stop wounds from bleeding.



How are spiders harmful?

Spiders can be harmful because they bite. A spider bite usually feels like a bee or wasp sting. Most people will get a red spot around the spider bite. It might also swell or be itchy and hurt.

If you are bitten by a spider, tell an adult, clean the area with hydrogen peroxide or alcohol, and use an ice pack to keep it from swelling too much. If you can, collect the spider carefully! If you collect the spider you can see what type bit you and the doctor will know what type of treatment to give you.

If you are bitten by a black widow or brown recluse call or go to the doctor! Black widow bites can cause cramping in muscles. Brown recluse bites kill the skin or tissue and can leave big scars if not treated.

Poison Control Information
1-800-222-1222

Wrap up Questions for Lesson 2:

Name some ways spiders can be beneficial or good.

Name some ways insects can be harmful or bad.

What should you do if you are bitten by a spider?

Activity 2-1: Harmful and Beneficial Spiders

Most spiders are beneficial. Only two spiders in Texas are actually harmful. Use what you learned in Lesson 2 and list ten (10) ways spiders are beneficial and five (5) ways spiders are harmful.

Spiders can be beneficial because:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Spiders can be harmful because:

1. _____

2. _____

3. _____

4. _____

5. _____

Activity 2-2: Harmful and Beneficial Spider Matching Game

Get into teams of at least 4 students. Each team must cut out the pictures below. Take a piece of paper and draw a line down the middle. At the top of the page make two categories (one for each column): (1) ways spiders are beneficial and (2) ways spiders are harmful. See the example below.

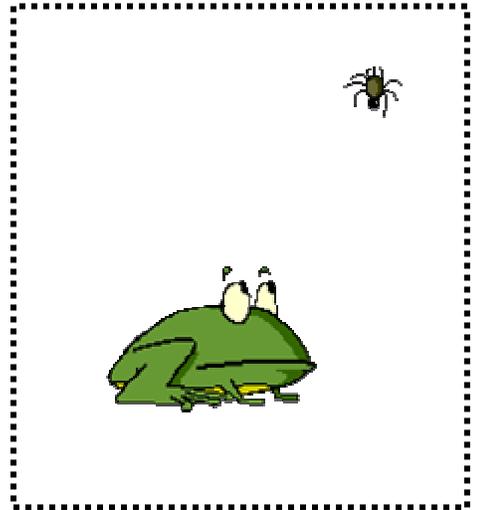
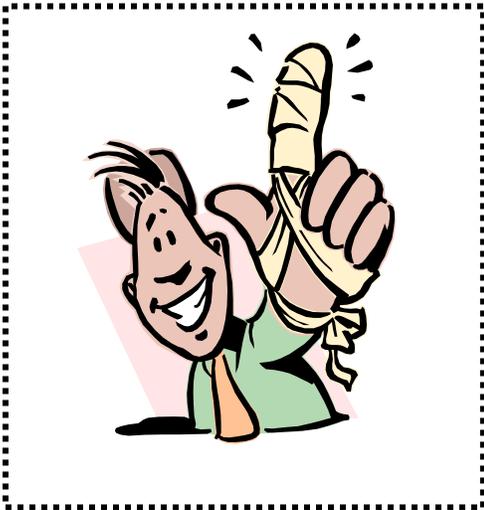
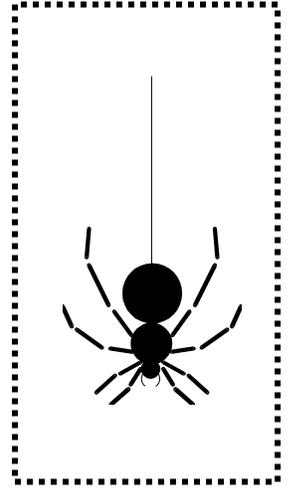
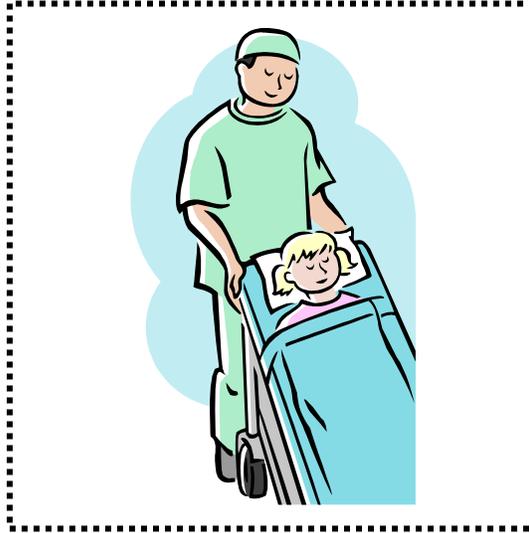
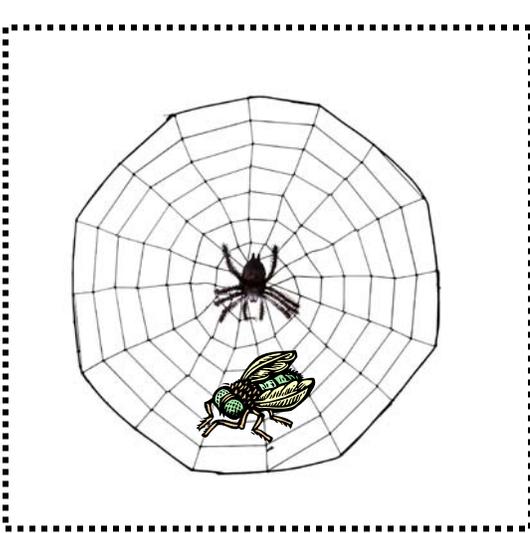
Place or glue the pictures in the category they belong. Under each picture write a sentence or two about why that picture shows how a spider is beneficial or harmful. Or match the pictures to sentences already provided by your teacher.

Now ask your teacher to come to your team and check your work. Your teacher will make sure your pictures are in the correct category. Your teacher will also ask you questions about why each picture makes spiders good or bad, so make sure you know what each picture means!

Ways Spiders are Beneficial

Ways Spiders are Harmful

Pictures for Activity 2-2



OUCH!!!



Optional Narratives for Matching Game:

Spider silk can be used to make bandages and to help stop cuts from bleeding.

Some spider bites only leave a little red mark, but some can make you very sick.

The silk that spiders spin can be used by humans for many different things.

Spider silk has many uses for humans. One way we use it is in telescopes to make the tiny crosshairs that let us zero in on objects in the sky.

Even if a spider is not poisonous, a bite can still hurt. But spiders only bite when they are scared.

Spiders are great predators and love to eat insects that we find annoying or harmful.

Spiders are part of the food chain and are eaten by many different types of animals. Without spiders these animals wouldn't have many things to eat!

Spider silk has many uses for humans and is very strong. We use spider silk for fishing lures because it will not break easily.

Lesson 3 – Spider Lifecycle

Reading Exercise

Spiders lay eggs that will hatch into many new spiders. A mother spider spins a silk egg sac and lays her eggs in the egg sac. The mother spider may stick her egg sac to trees, walls, in dark cracks, under rocks, or in the web. Some mother spiders will carry the egg sac with her until the babies hatch.

Glossary Words

Ballooning
Exoskeleton
Molt
Spiderlings

Spider eggs will hatch in a few weeks. The baby spiders that hatch are called **spiderlings**. Spiderlings look like adults but are lighter in color.

Spiderlings that are not taken care of by the mother may travel away from her to start their lives. Some spiderlings travel by wind by **ballooning**. They spin silk and wind picks up the spider by silk and takes them to a new place!

Spiderlings have to shed their skin or **molt** to grow. Spiders have their skeletons on the outside of their body called an **exoskeleton**. Spiders cannot grow until they molt their exoskeleton. They climb out of their exoskeleton, grow a little and then the new exoskeleton hardens up.

A spider may molt 4 to 12 times before it becomes an adult! Some female spider may molt all their lives!

Wrap up Questions for Lesson 3:

What is a baby spider called?

What do spiders have to do to grow?

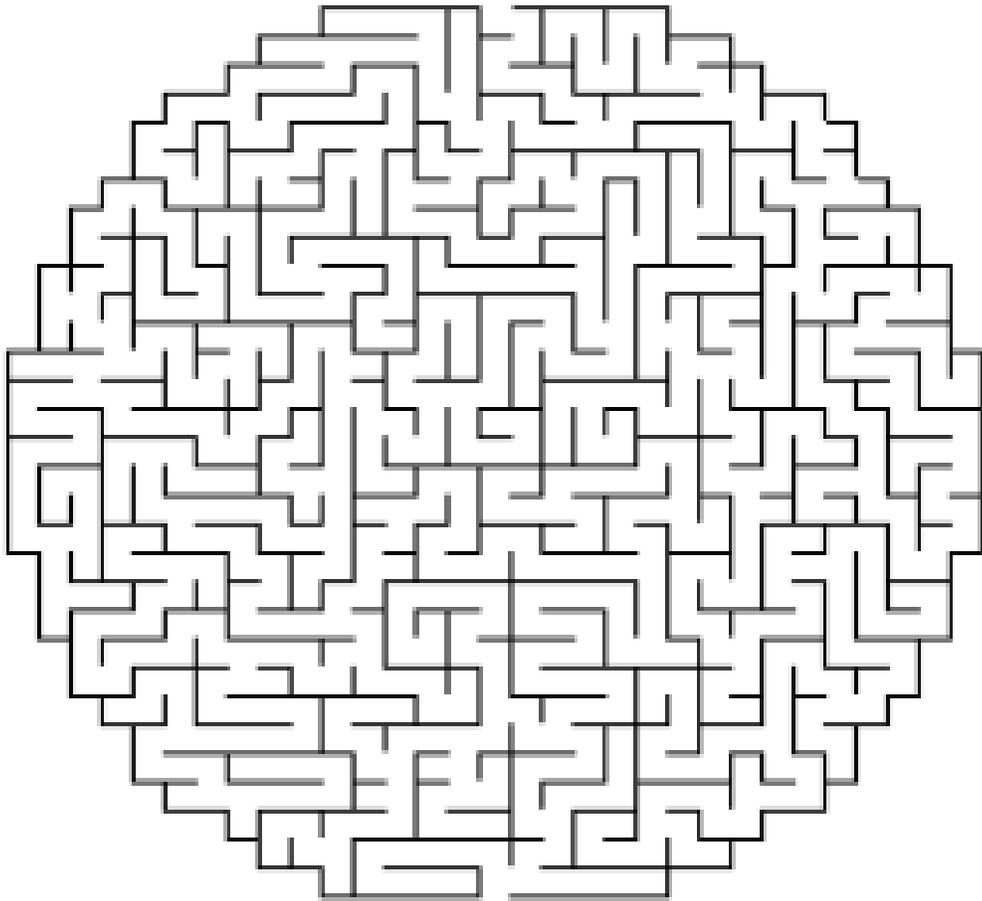
Where are some places where spiders put their eggs?

Activity 3-1: Spiderling Maze

Help the spiderling balloon its way to a new home!



Start



End



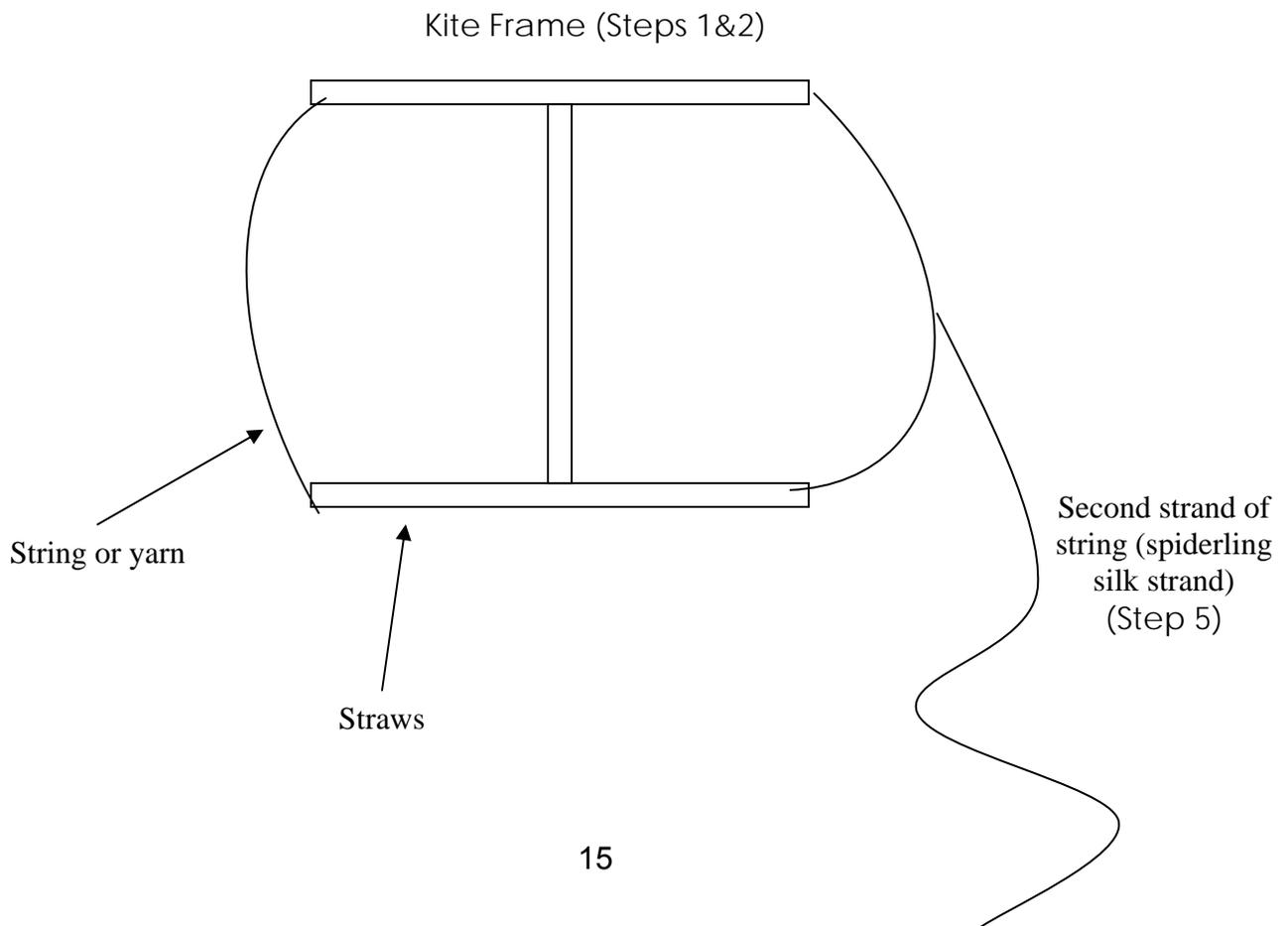
Activity 3-2: Ballooning Spiderling Kite

Materials:

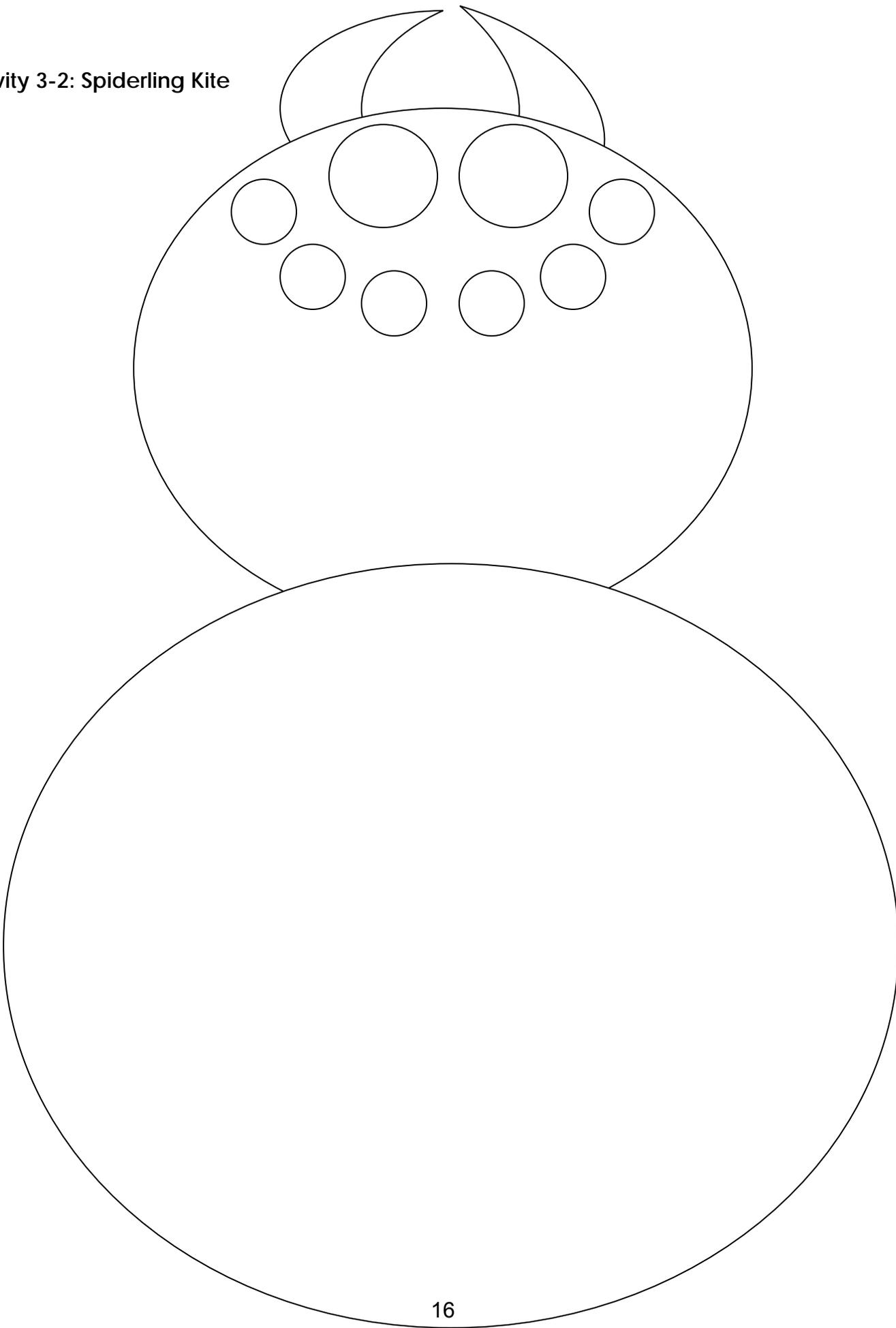
Straws (three per student)
String or yarn
Construction paper

Directions:

- 1) Each student will take three straws to make the kite frame. Make a frame shaped in a capital H. Be sure your frame isn't wider or longer than the spiderling kite. Cut the center straw a little shorter than the other two.
- 2) Glue or tape the straws together to form the frame. Run a piece of string or yarn through the straws and tie the ends together.
- 3) Now cut out the spiderling kite and color it as you like. Attach the kite (spiderling) to the frame.
- 4) Cut construction paper into eight strips and fold the strips in squares of about two inches like an accordion. Tape four strips to each side of the cephalothorax of the kite. These are the spider legs.
- 5) Take a long piece of yarn or string and tie it to the string you have placed through the straws. This string is the silk strand that spiderlings use to move with the wind and it will also be what you use to fly your kite.



Activity 3-2: Spiderling Kite



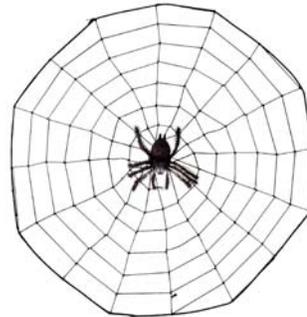
Lesson 4-1 – Arachnophobia

Glossary Words
Arachnophobia

Reading Exercise A

Arachnophobia is the fear of spiders. People who are very afraid of spiders may be arachnophobic. There is not a reason to be scared of spiders. There are 900 types of spider in Texas, but only a few can actually hurt you.

You should be careful of black widows and brown recluses. These spiders can hurt you if they bite you.



Wrap up Questions for Lesson 4-1:

What is arachnophobia?

Why is there no reason to be afraid of spiders?

Lesson 4-2 – Black Widow Spiders

Reading Passage B

Black widows are shiny, black spiders. They have a bright red hour glass mark on the bottom of their abdomens. Black widows like to hang belly side up in their webs, so it is easy to see the hour glass. The hour glass can also be yellow or orange.

Male black widows are half the size of females and their bite cannot hurt you.

Black widow venom is called a **neurotoxin**. It affects the nervous system. The venom of black widows is actually fifteen times more deadly than a Diamondback Rattlesnake. But when a black widow bites, it can only give you a small amount of venom and it is very unlikely that you will die from the bite.

Black Widow Spider



Photo by: Dr. John Jackman, Texas A&M University

Wrap up questions for Lesson 4-2

What do black widows look like?

What is the type of venom of a black widow?

Even though a black widow's venom is more deadly than a rattlesnake, why can't it kill you?

Lesson 4-3 – Brown Recluse Spiders

Reading Exercise C

Brown recluse spiders are sometimes called “fiddleback” or violin spiders. They get these other names because they have a fiddle or violin on the back of their cephalothorax.

Brown recluses are brown or tan spiders and the fiddle is a darker brown. Brown recluse females are about the size of a quarter, including their legs. Males are a little smaller. Brown recluses have tiny hairs covering their body and only six eyes instead of eight. Both males and females are venomous.

Brown recluse spiders venom is called a **cytotoxin**. The venom causes the skin and tissue around the bite to die and make a nasty sore. After the bite you might feel burning and see a sore start to form. The sore will get larger. Some people (usually children and the elderly) will get a fever, sick to their stomach, and throw up.

Brown Recluse Spider



Photo by: Dr. John Jackman, Texas A&M University

Remember!

If you are bitten by a brown recluse or black widow, call or go to the doctor. If you can, catch the spider and take it to the doctor to make sure you get the best treatment!

Wrap up questions for Lesson 4-3

What do brown recluse spiders look like?

What is the type of venom of a brown recluse?

What should you do if you are bitten by a brown recluse?

Activity 4-1: Harmful Spider Word Find

Search for the following words that characterize the harmful spiders, black widows and brown recluses.

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

ARACHNOPHOBIA

BLACK

BROWN

CYTOTOXIN

EIGHT

EYES

FIDDLE

GLASS

HAIRY

HOOR

NEUROTOXIN

RECLUSE

RED

SHINY

SIX

VENOM

VIOLIN

WIDOW

Activity 4.2: Spider Matching Game

Group into teams as directed by your teacher. Cut out the following title cards and clue cards. Place the clue cards face down. The clue cards are characteristics of the two spiders on the title cards. When you are instructed by your teacher, flip over the clue cards and place them under the title card of the spider they best describe. Each spider will have eight (8) clue cards. The first team to match all the clue cards to the correct spider is the winner!

Title Cards

**Black Widow
Spider**

**Brown Recluse
Spider**

Clue Cards

SHINY

BLACK

BROWN

CYTOTOXIN

HAIRY

SMOOTH

Clue Cards Continued...

SIZE OF A
QUARTER

FIDDLE

NEUROTOXIN

BITE MAKES
A BAD SORE

RED HOUR
GLASS

6 EYES

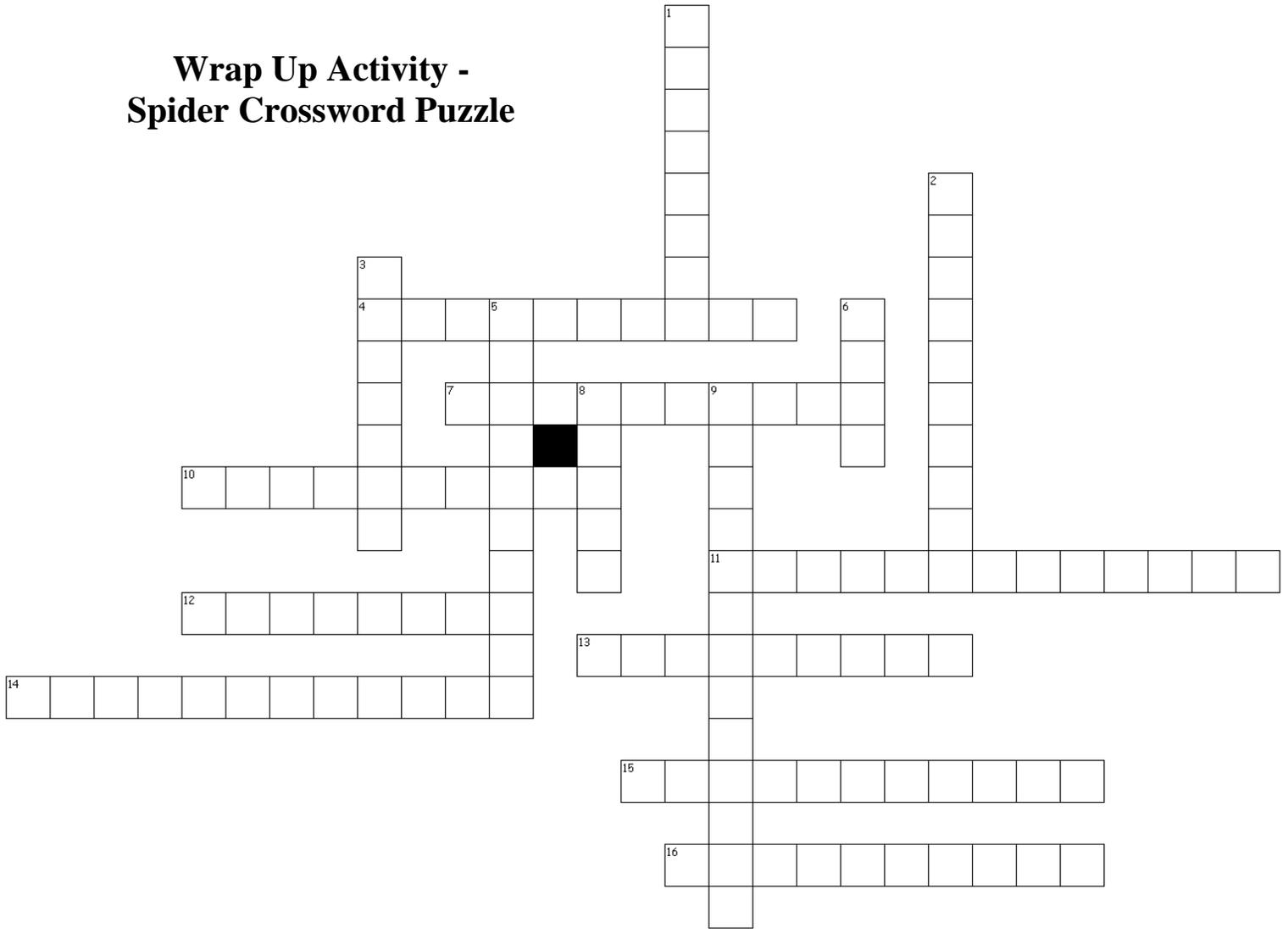
8 EYES

HANGS
UPSIDE DOWN
IN WEB

ONLY
FEMALES ARE
HARMFUL

MALES AND
FEMALES ARE
HARMFUL

Wrap Up Activity - Spider Crossword Puzzle



Across

- 4. A harmful, shiny, black spider with a red hour glass on the abdomen
- 7. Most spiders are not harmful, they are _____
- 10. A baby spider
- 11. The fear of spiders
- 12. An animal that eats prey, what all spiders are
- 13. The type of venom of a brown recluse
- 14. A harmful brown spider with a fiddle on the cephalothorax
- 15. Outside covering of a spider
- 16. How spiderlings travel by wind

Down

- 1. An arthropod with eight legs and two body parts
- 2. The type of venom of a black widow spider
- 3. The second body part of a spider
- 5. Where the fangs of a spider are found
- 6. Shedding the exoskeleton
- 8. The number of legs of a spider
- 9. The first body part of a spider

Word Bank

- Arachnid
- Arachnophobia
- Abdomen
- Ballooning
- Spiderling
- Cephalothorax
- Eight
- Cytotoxin
- Molt
- Exoskeleton
- Chelicerae
- Beneficial
- Black widow
- Neurotoxin
- Brown recluse
- Predator

Wrap Up Activity: Spider Word Search

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

Word Bank

ABDOMEN
ARACHNID
ARACHNOPHOBIA
BALLOONING
BENEFICIAL
BLACKWIDOW
BROWNRECLUSE
CEPHALOTHORAX

CHELICERAE
CYTOTOXIN
MOLT
NEUROTOXIN
PALPS
SPIDER
SPIDERLING

Glossary Terms

Arachnid (Lesson 1) – an arthropod with two body parts (cephalothorax and abdomen), eight legs, no antennae and no wings. Spiders, scorpions, mites and tick are all arachnids.

Arachnophobia (Lesson 4) – An irrational fear of spiders.

Abdomen (Lesson 1) – The second and last body part of an arachnid. The third and last body part of an insect.

Ballooning (Lesson 3) – A process spiderlings perform in order to travel from one place to another. Spiderlings spin a single silk strand and allow the wind to blow them to new sites.

Cephalothorax (Lesson 1) – The first body part of an arachnid where the legs, eyes, and mouthparts are found.

Chelicerae (Lesson 1) – Part of the mouthparts of spiders that contain the fangs.

Cytotoxin (Lesson 4) – The type of toxin found in brown recluse venom. Causes live tissue to die.

Exoskeleton (Lesson 3) – The skeleton or supporting structure on the outside of an insect.

Molt (Lesson 3) – A process spiders must go through in order to grow. Shedding of the exoskeleton.

Neurotoxin (Lesson 4) – The type of toxin found in black widow spiders. Affects the nervous system of the body.

Palps (Lesson 1) – Mouthparts on arthropods that are used as sensory structures.

Predator (Lesson 1) – An animal that consumes prey.

Spiderling (Lesson 3) – An immature spider.

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