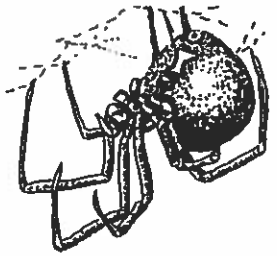
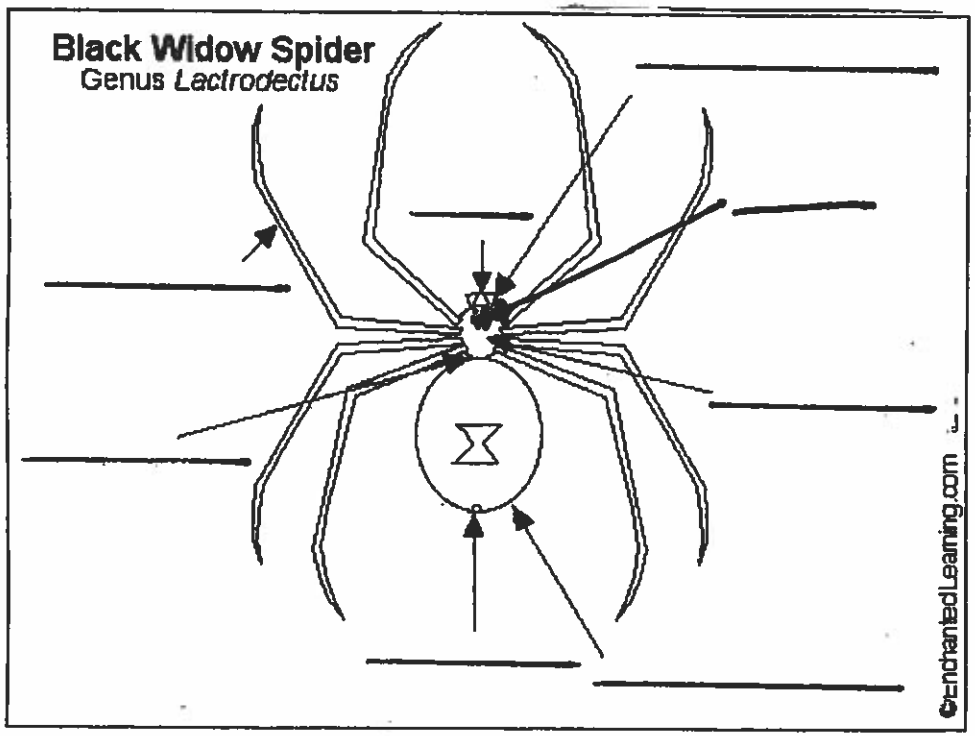
# Black Widow Anatomy



Read the information below and label the external anatomy of the black widow spider.




**Create a pipe cleaner spider!**
You'll need 3 pipe cleaners

- Cut 2 long pipe cleaners in half. Fold all 4 pieces into an "M." It works best to bend them all together. These will make the legs.
- Begin wrapping a long pipe cleaner around the middle of the "M." From this pipe cleaner, form the abdomen and cephalothorax.
- Fan out legs and curl up ends slightly.
- Optional: Add a piece of red felt on the abdomen and add 8 eyes.

**abdomen** - the belly, also called the opisthosoma. It contains the guts, heart, reproductive organs, and silk glands.
**cephalothorax** - the fused head and thorax, also called the prosoma. It contains the brain, jaws, eyes, stomach, and leg attachments.
**eyes** - tiny eyes (also called ocelli) that can only detect light and dark - they are located on top of the spider's cephalothorax. Most species of spiders have 8 eyes, but other species have 12, 6, 4, 2 or no eyes.
**jaws** - also called chelicera, they are located below the eyes. The jaws are tipped with fangs that can inject poison.

**leg** - spiders have 8 legs. Each leg is made of seven segments and has 2 or 3 tiny claws at the tip. If a leg is lost, it will grow back.
**pedicel** - the spider's waist - it connects the cephalothorax and the abdomen.
**pedipalps** - also called palps, these two sensory feelers look like very short legs attached to the front of the spider - they taste food.
**spinnerets** - where the spider's silk is released - they are located at the tip of the abdomen.

**Survey:**
Have you ever seen a Black Widow Spider?

☐ YES ☐ NO

If yes, where did you see it?

_____

Modified from www.enchantedlearning.com

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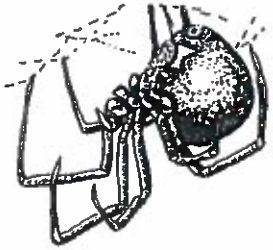

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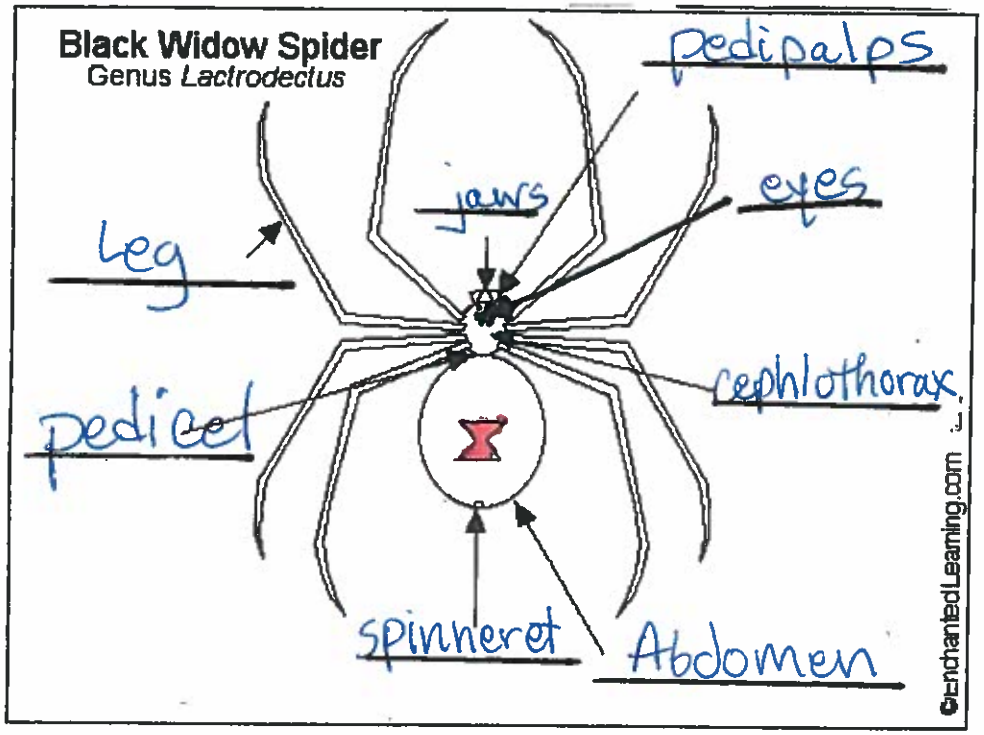


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**Survey:**
Have you ever seen a Black Widow Spider?

☒ YES ☐ NO

If yes, where did you see it?

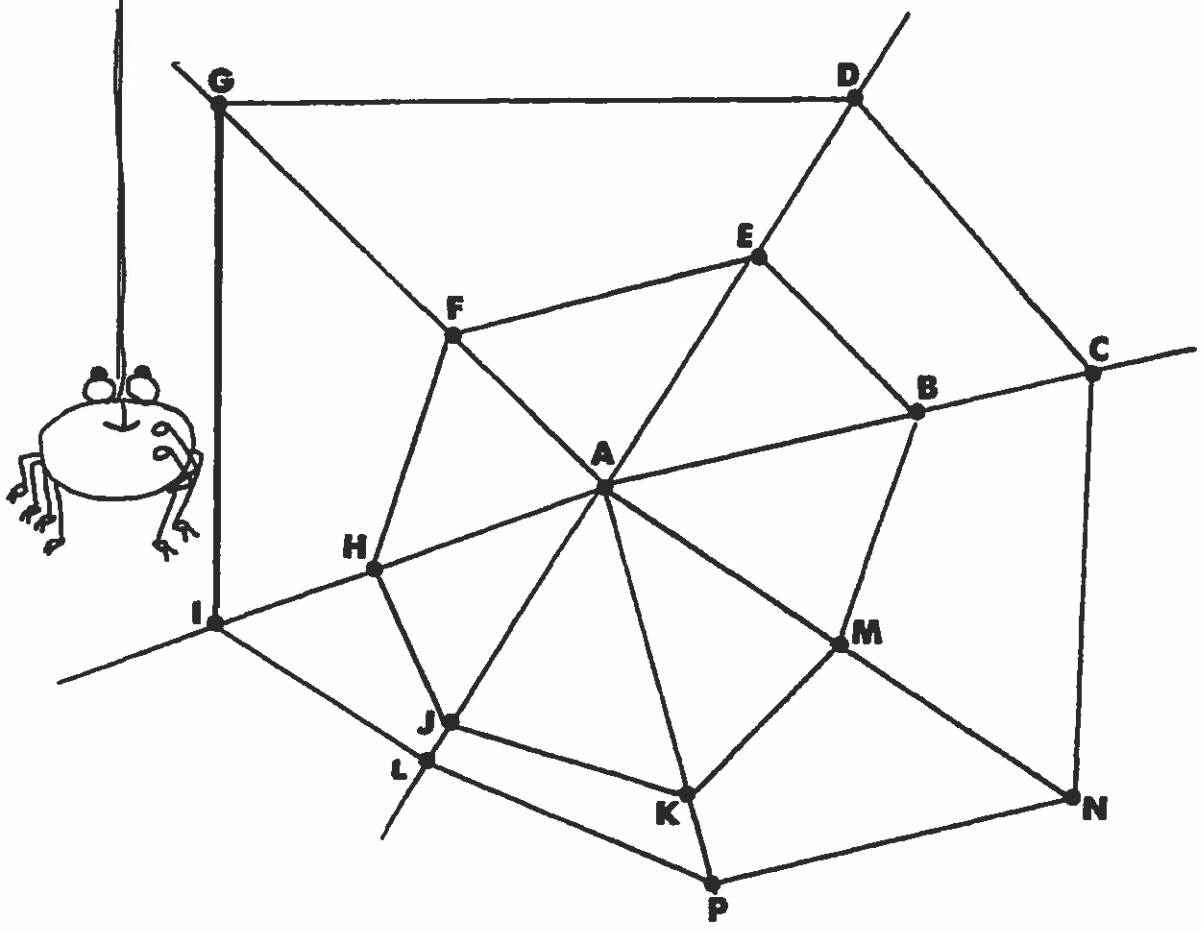
garage

Modified fr[illegible] www.enchantedlearning.com

Name_____

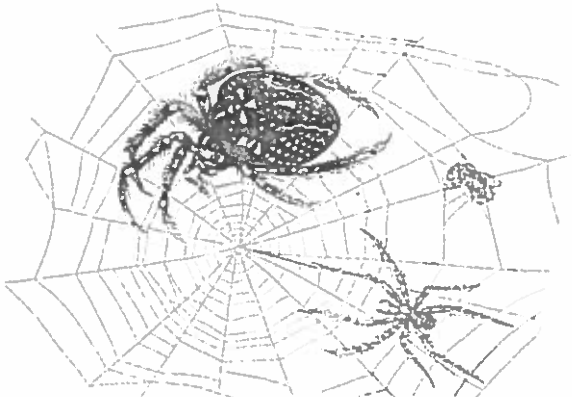
# What's Your Angle?

**Find the angles. Use your protractor to measure the degrees. Color the angles as indicated by outlining them.**




| | Degrees | Color | | Degrees | Color |
|---|---|---|---|---|---|
| ∠DGI | ____ | Yellow | ∠BEA | ____ | Red |
| ∠CAN | ____ | Orange | ∠HFA | ____ | Purple |
| ∠AKJ | ____ | Green | ∠DEF | ____ | Black |
| ∠PNC | ____ | Blue | ∠GAB | ____ | Brown |

# Spider Web Geometry



## Objectives

Students will: 1) recognize spiders as wildlife; and 2) generalize that people and wildlife share similar environments.

## Method

Students research the spider of their choice and then construct a replica of the spider's web, applying principles of geometry.

## Materials

Writing materials for use in research; measuring instruments; thread; glue; OPTIONAL: photographic materials

## Background

Spiders are one form of wildlife. Although many people have an aversion to spiders, they actually are important contributors to the ecological system. This activity emphasizes spiders as one of the diverse range of animals included within a definition of wildlife. Wildlife includes all animals other than those domesticated by people. Wildlife ranges in size from microscopic forms, like amoebas, to many 100 feet in length, like the blue whales. Wildlife occurs in a variety of forms, colors and adaptations, from the muskox to the manatee, the mollusk to the myna. Wildlife includes spiders, insects, worms, reptiles, amphibians, fish, birds and mammals, if non-domesticated. (See the Project WILD activity "Animal Charades.")

The major purpose of this activity is for students to identify spiders as one form of wildlife, developing and applying mathematical and research skills in the process.

**Grade Level:** 5-8

**Subject Areas:** Mathematics, Science, Language Arts, Expressive Arts, Environmental Education

**Duration:** two 45-minute sessions

**Group Size:** individual or small group project

**Setting:** indoors and outdoors

**Conceptual Framework Topic Reference:** WPIA2

**Key Terms:** wildlife, spiders, arachnids, geometry

**Appendices:** Outdoors, Field Ethics, Animals in Classrooms, Metric Conversion Chart

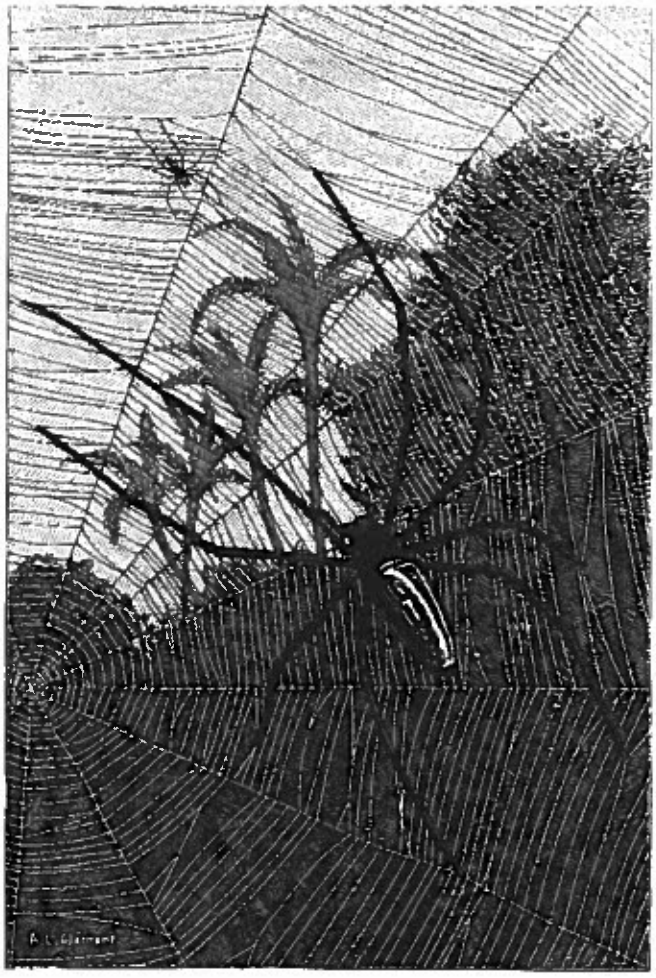
## Procedure

1. Talk with the students about spiders. Some may express dramatic reactions, while others will point out the contributions made by spiders—for example, in reducing populations of other insects. Expand the discussion to wildlife in general, assisting the students in establishing working definitions of wildlife and domesticated animals if they have not done so already.
2. Send the students on a 10-minute investigation of the room or schoolgrounds, looking for any evidence of spiders. (Caution the students to touch neither the webs nor spiders. In advance, determine whether there are any poisonous spiders in your area. If they are in your area, teach your students how to recognize and avoid them. Remind your students that they may not touch the spider or its web. That precaution can be as much for their sake as the spider's.)

3. Ask the students to research a spider of their choice, investigating the appearance and characteristics of the spider and its web. Find out the spider's habitat needs and its common prey and assess the spider's role in its environment. If they don't know already, ask the students to find out what makes a spider (an arachnid) different from an insect. They should design a replica of the spider's web as accurately as they can, using recognizable geometric shapes.
4. Next the students should make the web. Thread and glue can be used. The webs should be constructed to scale and made as realistic as possible.
5. Ask the students to present their findings. What have they learned about spiders? What contributions do spiders make to the environment? What theorems of geometry were most useful in their web construction? Encourage the generalization that people and wildlife share environments—and that spiders are wildlife.

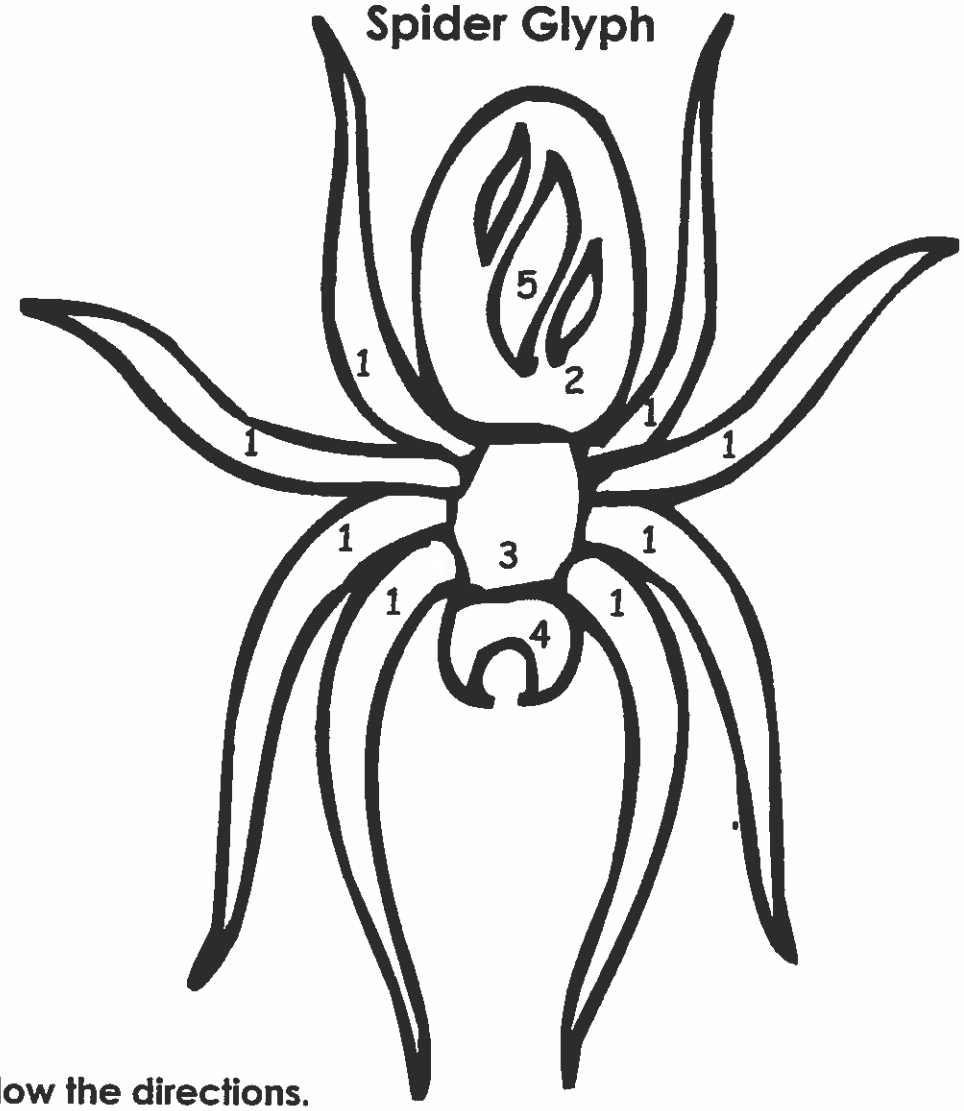
## Evaluation

1. Identify five spider species common in your area.
2. List three characteristics that make an arachnid different from an insect.
3. Write a proof to support the geometric theorems that you used in constructing your web.



Name_____ Date_____

# Spider Glyph




**Follow the directions.**

1. If you think spiders are cool, color the **1** areas ***purple***.
   If you do not think spiders are cool, color the **1** areas ***green***.
2. If you are afraid of spiders, color the **2** area ***red***.
   If you are not afraid of spiders, color the **2** area ***orange***.
3. If you have ever seen a spider in your school, color the **3** area ***yellow***.
   If you have never seen a spider in your school, color the **3** area ***blue***.
4. If you have ever read a story about a spider, color the **4** area ***red***.
   If you have never read a story about a spider, color the **4** area ***brown***.
5. If you would like a pet spider, color the **5** area ***pink***.
   If you would not like a pet spider, color color the **5** area ***black***.