

# Science @Home

## ARACHNIDS

**Arachnids have eight legs—and countless other cool qualities. Meet an array of arachnids large and teeny-tiny in a week of activities for ages 8-11.**

From spiders to scorpions to tiny mites that live on your face (!), arachnids are a marvelous, misunderstood class of arthropods comprising 60,000+ species around the world. Get closer to these not-so-creepy crawlers—and the Academy scientists who study them—through crafts, videos, and more.

*Please note: While Science @ Home activities are designed to be conducted by kids, some little ones might need adult help with reading instructions and preparing crafts.*

### Day 1: What's an Arachnid?

45-60 minutes

- » Awesome Arachnids (coloring) (en español)
- » Arachnid or Insect? (craft)
- » Arachnid investigation (video)

### Day 2: Spiders

45 minutes

- » Spooky Spider Ring (craft)
- » Party Like a Peacock Spider (activity)
- » Handprint Spider (craft)

### Day 3: Scorpions

45 minutes

- » Local Scorpions (video)
- » Scorpion Puppet (craft)
- » Scorpion Scene (craft) (en español)

### Day 4: Arachnid Abodes

45 minutes

- » Spiderweb String Art (craft)
- » Silk Investigation (activity) (en español)
- » Constant Companions: Face Mites (video)

### Kid & Caregiver Extension Activities

- » Spider Sharing (resource)
- » Science Heroes: Lauren Esposito & Michelle Trautwein (resource)
- » Unlocking the Power of Venom (video)
- » Face Mites! (resource)





# Awesome Arachnids

Arachnids are found on every continent except for Antarctica. California is abundant with arachnids—from spiders building webs in gardens to the mites that live on your face. Each of these amazing animals are important to their ecosystem as predators or prey.

**Yellow Garden Spider:** This species of spider can be found near farms, roadsides, and gardens. They are easy to find because of the webs they spin. Yellow garden spiders spin conspicuous zigzag patterns, known as a *stablementum*, into their webs. The patterns may make the webs more visible to birds so they don't fly through their web.

**Face Mites:** All human bodies have microscopic face mites, or *demodex*, which live in the crevices of hair follicles. Since face mites can be passed between people in close family units, they can tell a lot about a person's ancestry.

**Harvestmen:** While they may look like spiders at first glance, harvestmen belong to a separate order of arachnids. Their bodies have only one oval-shaped segment instead of two distinct ones, like spiders. Harvestmen also lack venom and fangs.

**California Common Scorpion:** This scorpion can be found in various habitats throughout California, from dry scrublands to sandy coastlines. Scorpions and other arachnids molt their exoskeletons every so often, like how a reptile sheds its skin. That same exoskeleton glows when exposed to ultraviolet light.

**Red-backed Jumping Spider:** Found throughout western North America, this spider with its colorful abdomen is one of the largest jumping spiders. Its two large, front-facing eyes on its tall, rectangle-shaped head help these spiders jump and pounce on their prey as they propel themselves forward using their back limbs. A silk thread acts as a safety line to help stabilize their jump.

**Pacific Coast Tick:** This common tick is found throughout California and prefers dry, shrubby habitats. Ticks are parasitic arachnids that consume blood for food. Host animals for this species of tick include different mammals and birds, including horses, deer, and rodents.



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# Arácnidos asombrosos

Los arácnidos se encuentran en todos los continentes excepto en la Antártica. California abunda con arácnidos - desde arañas que construyen telas en jardines hasta ácaros que viven en tu cara. Cada uno de estos animales asombrosos son importantes en su ecosistema como depredadores o presas.

**Araña amarilla de jardín:** Esta especie de arañas se pueden encontrar cerca de granjas, los lados de caminos, y jardines. Son fáciles de encontrar debido a las telas que tejen. Arañas amarillas de jardín tejen patrones de zigzag conspicuo, conocidos como estabilimento, en sus telas. Estos patrones pueden hacer las telas más visibles para que las aves no vuelen a través de la tela.

**Ácaros de cara:** Todos los cuerpos humanos tienen ácaros de cara microscópicos, también conocidos como *demodex*, que viven en las grietas de los folículos pilosos. Dado que los ácaros de cara se pueden transmitir entre miembros de familia que son cercanas, nos pueden contar mucho sobre la ascendencia de una persona.

**Opiliones:** Aunque a primera vista se parecen como arañas, opiliones pertenecen a una orden separada de arácnidos. Sus cuerpos solo tienen un segmento en forma ovalado en vez de dos segmentos distintos, como arañas. Opiliones también les faltan veneno y colmillos.

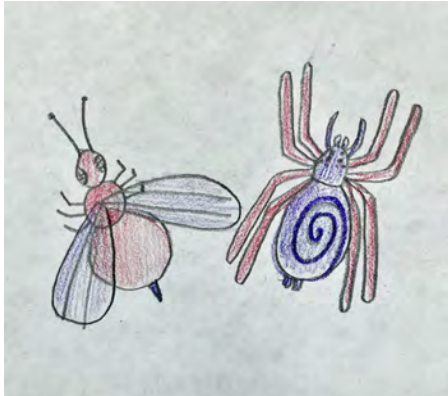
**Escorpión común de California:** Este escorpión se puede encontrar en varios hábitats en California desde matorrales secos hasta costas arenosas. Escorpiones y otros arácnidos mudan su exoesqueleto cada cierto tiempo, como un reptil muda su piel. Ese exoesqueleto brilla cuando se expone a la luz ultravioleta.

**Araña saltarina de espalda roja:** Encontrada por todo el oeste de Norteamérica, esta araña con su abdomen colorido es una de las arañas saltarinas más grandes. Sus dos ojos grandes que están en frente de la cabeza alta de forma rectangular, ayudan estas arañas a saltar y abalanzarse sobre su presa mientras se impulsan hacia enfrente usando sus piernas posteriores. Un hilo de seda actúa como una línea de seguridad para ayudar a estabilizar su salto.

**Garrapata de la Costa Pacífica:** Esta garrapata común se encuentra por todo California y prefiere hábitats secos y arbustivos. Las garrapatas son arácnidos parásitos que consumen sangre como alimento. Los animales huéspedes para esta especie de garrapata incluyen diferentes mamíferos y aves, incluyendo caballos, venados, y roedores.



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# Arachnid or Insect?

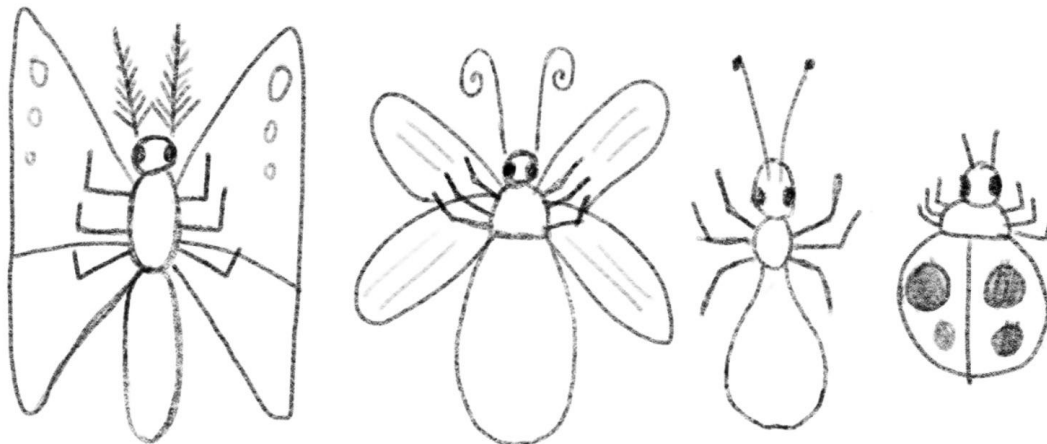
Have you ever seen a spider or a beetle? What about a scorpion? All of these animals are in a special group called arthropods—but some of them are insects, and some are arachnids. Like members of a family, they have some things in common, and some differences. Design and draw your own insect and your own arachnid to observe their similarities and differences.

## Materials

Blank paper  
Pencil, crayons, or colored pencils for drawing

## Directions

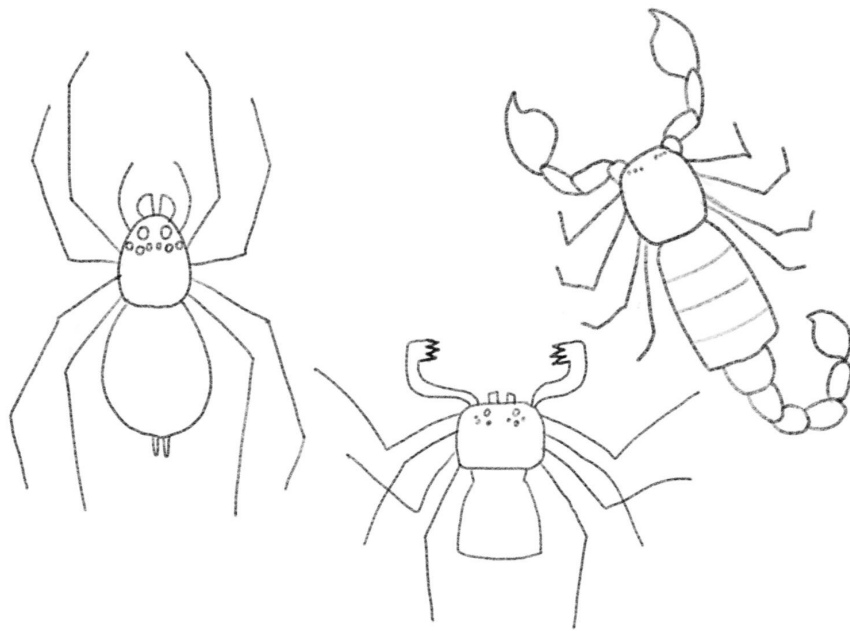
### Draw an Insect



1. **Look** at the insect outlines above or a photo of your favorite insect for inspiration or guidance as you follow along through the different insect body parts to design your own insect.
2. **Draw** 3 connected body parts, similar to the shape of a snowman. You get to choose whether they are like an oval, a circle, or a different shape altogether. These body parts are called the head, the thorax, and the abdomen. Is your insect's body long and slender like a butterfly's, or round like a beetle's?

3. **Add** 2 antennae to the top of your insect's head. These antennae can be plain lines, or you can give them some pizzazz by adding a small circle on top, a swirl shape, or branching fringe.
4. **Add** 2 compound eyes to your insect's head. Compound eyes have many little "faces" and you can show this in your drawing by coloring them in with a criss-cross pattern.
5. **Add** 3 legs to each side of your insect's thorax, (the middle part of its body) for a total of 6 legs! Arthropods have jointed legs, and you can reflect this by drawing sharp corners on any bends in your insect's legs.
6. *Optional: add wings!* Many, but not all, insects have wings. Will your insect have one pair of wings like a fly? Two pairs of fancy patterned wings like a butterfly or moth? Or will your insect have *elytra* –special covers for their wings like a ladybug and its other beetle relatives?
7. *Optional: color* your insect, or add other features that could help your insect survive. For example, a stinger like a bee's or a long proboscis (a mouth part like a straw) for a butterfly or mosquito-like insect.

## Draw an Arachnid



1. **Look** at the arachnid outlines or a photo of your favorite arachnid for inspiration or guidance as you follow along through the different arachnid body parts to design your own arachnid.



2. **Draw** 2 connected body parts for your arachnid. These are called the *cephalothorax* (“cephalo” means head, so the cephalothorax is like a head and upper body combination) and the abdomen. If your arachnid is spider-like, draw a big round abdomen. If it is more like a scorpion, its abdomen might look different!
3. **Add** some mouthparts to the front of your arachnid’s head. This can look like two little bumps on the front of the “face.”
4. **Add** eyes! Most spiders have 8 eyes, but they can have up to 12—or even no eyes at all! Scorpions have between 4 and 12 eyes, always in pairs. These eyes are simple eyes, different from the compound eyes of insects.
5. **Add** *pedipalps* to the front of your arachnid’s cephalothorax. These look almost like short legs for a spider and are often used for the sense of touch. If you are creating a scorpion-like arachnid, pedipalps are shaped like pincers.
6. **Add** walking legs. Draw 4 jointed legs on either side of your arachnid’s cephalothorax. Will your arachnid have slender legs, or thicker legs like a tarantula?
7. *Optional:* **add** 2 spinnerets to the bottom of your arachnid’s abdomen if it can spin webs, or add a scorpion tail with a venomous stinger if your arachnid can sting its prey.
8. *Optional:* **color** your arachnid or draw a background of its habitat, or home. Does your arachnid have any distinctive markings, like a black widow spider’s red hourglass or a peacock spider’s colorful abdomen?





# Spooky Spider Ring

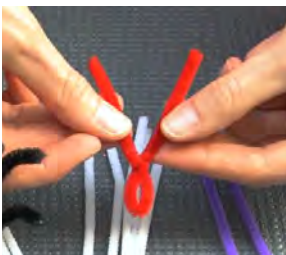
Did you know that spiders are not bugs? They are arachnids - with eight legs and two body segments instead of six legs and three body segments like insects. And as spooky as some of us may find spiders, they are important to ecosystems and help keep other insect populations in check.

## Materials

Three 12-inch pipe cleaners, cut in half  
Scissors

## Directions

1. **Make the spider body (shown in red):**
  - a. Fold one 6-inch pipe cleaner in half, and twist once to make a small loop. This will be the spider's head.
  - b. Bend one of the long ends up to the spider's head and twist once to make the body.
  - c. Coil the other long end up to the spider's head and tuck in the tip.



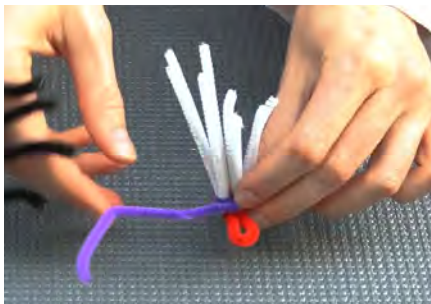
**2. Make the spider legs (shown in white):**

- a. Lay four pipe cleaners across the top of the spider, where the head meets the body. These will be the legs.
- b. Fold all four of the legs in half, around the body.



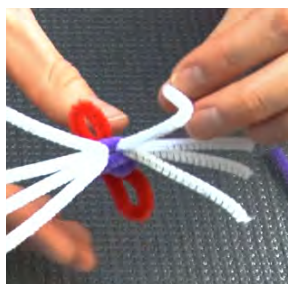
**3. Add the ring (shown in purple):**

- a. Wrap the last six-inch pipe cleaner in a circle around the base of the legs.
- b. Then bend that piece down under the spider's body to make a large loop for the ring.
- c. Fit this loop to your finger and then secure it by wrapping the end around the legs.



**4. Finish:**

- a. Fold four legs down to the left, and four legs down to the right.
- b. Then bend each spider leg in half and add a second small bend at the end.
- c. Adjust the ring, body, and legs until you are happy with the spider's shape.





# Party Like a Peacock Spider

Peacock spiders, while only about as big as a grain of rice, have brilliant colors and flappy extensions on their abdomens, which they can flash as part of an elaborate song and dance to attract a mate. In this activity, craft your own dazzling display and learn to boogie like one of nature's most flamboyant dancers.

## Materials

- 1 paper plate
- 1 piece of paper
- Scissors
- Stapler
- Crayons, markers, colored pencils, or paints
- Optional: abdomen template (page 4)

## Directions

1. **Cut** your paper plate into the shape for your spider's abdomen. Peacock spider abdomens (and the flaps attached to them) are a variety of different shapes—see the reference photos on page 3 for ideas. If you need help choosing a shape, print out and cut the template on page 4, trace the border onto your plate, and then cut it.
2. **Color in** your plate, either using your imagination or the reference photos for inspiration. Remember that this should be dazzling, so use bright colors and/or contrasting patterns. Think about other brightly colored animals you know. How might it help them to have bright colors? How could bright colors also be a drawback?
3. **Get ready** to attach the abdomen.
  - a. **Cut** lengthwise, 2 thick strips from your scrap paper.
  - b. **Staple** those pieces to the paper plate as pictured, attaching them to the blank side of the plate.
  - c. **Fit** the headband around your head comfortably, and then remove it. **Staple** the paper strips together.

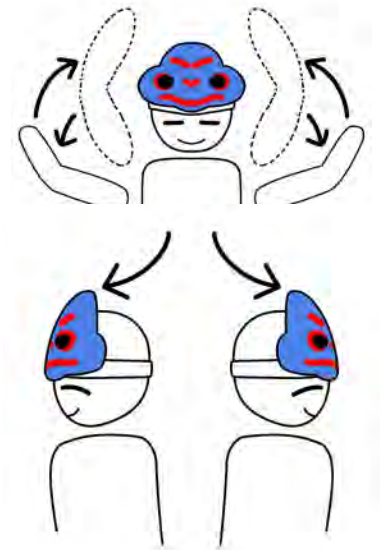


4. **Your abdomen is done!** Put your colorful creation on your head to represent the spider's abdomen, and get ready to dance!

## Time to Party!

Male peacock spiders dance in order to attract their mate. Different species do different dances, wiggling their body, flashing their abdomen, and shaking their extra-long third legs. In addition to the brilliant visuals, the spider will vibrate their bodies against the ground to produce special vibrations. However, it's not all fun and games: If a male peacock spider fails to impress a female, she might eat him! Even if he does impress her, he might end up a meal after mating. [Follow this link](#) to see a Youtube video of a peacock spider mating dance for yourself! **Choreograph** (plan in advance) or **improvise** (make it up as you go along) your dance. You can use the toolkit of dance moves below, but add in moves of your own for personal flair. Dance in a way that feels good in your body.

1. **Move your arms** like the hands of a clock to copy the up-and-down movements of the long third legs of the spider.
2. **Shake your head** gently to wiggle your beautiful "abdomen."
3. **Stomp your feet** carefully on the ground to create steady vibrations.



Of course, when you want to dance it helps to have music! You can dance to one of your favorite songs or [click here](#) and dance to an Academy tune.



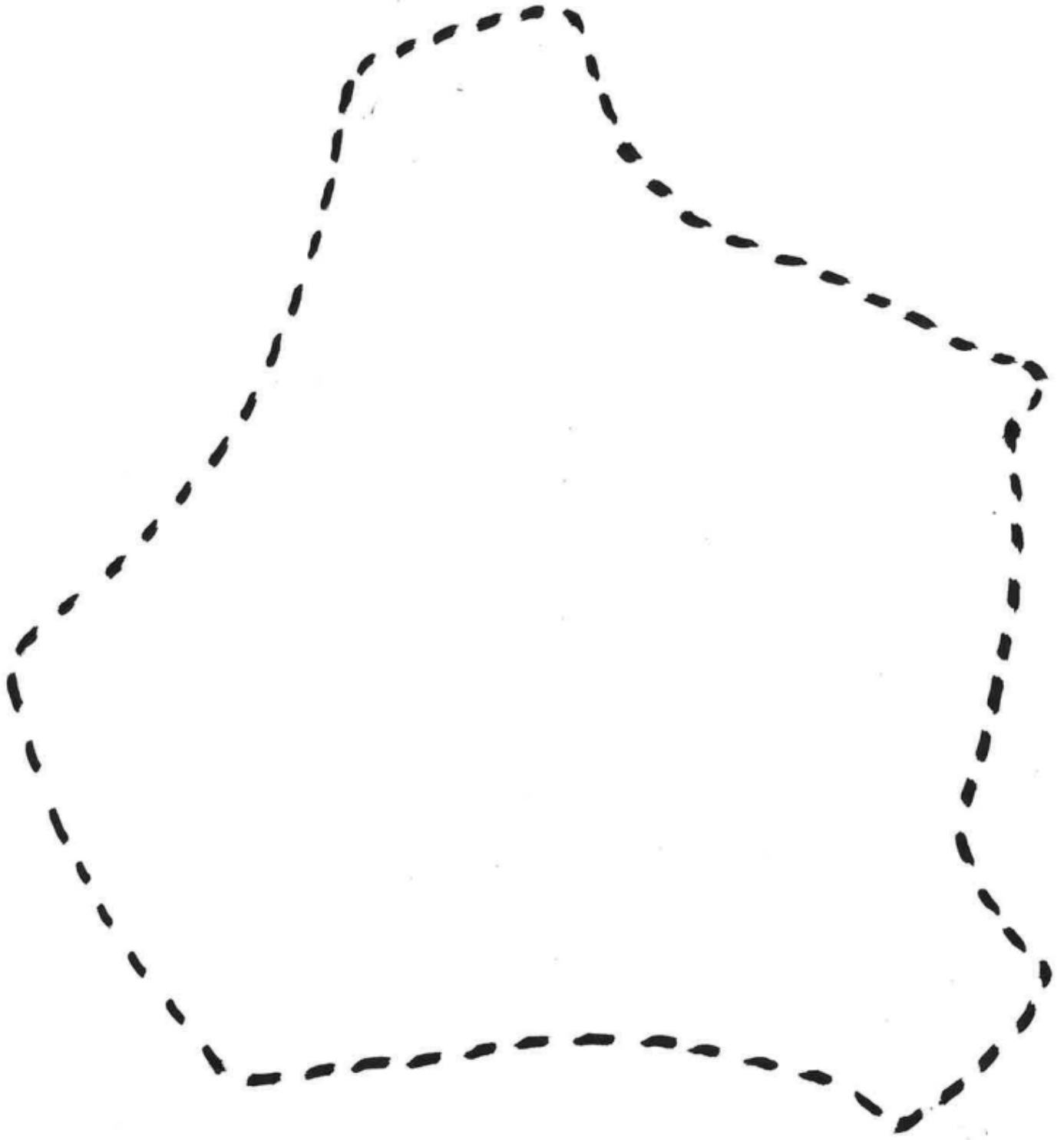
## Reference Photos:

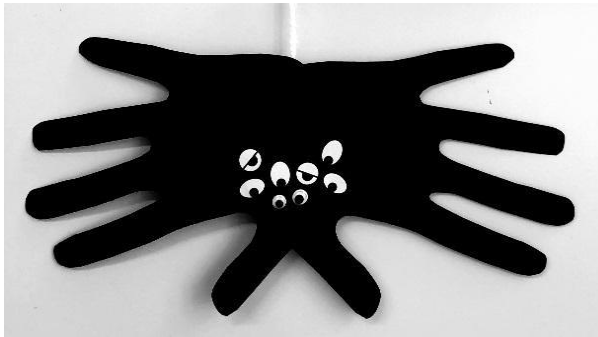


*Acknowledgement: All photos and videos of peacock spiders in this activity are Copyright by Jurgen Otto, who has been photographing and studying these spiders since 2005. Additional photos, videos, and information about his work is available at: <https://www.peacockspider.org>*



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# Handprint Spider Craft

Make a hanging spider with eight legs to move around, two fangs to help it catch its prey, and eight eyes to see.

## Materials

Black or brown paper

Scissors

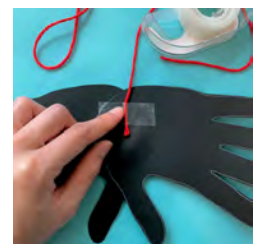
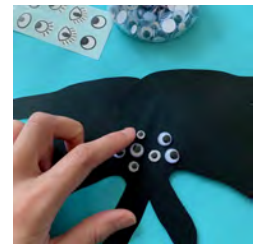
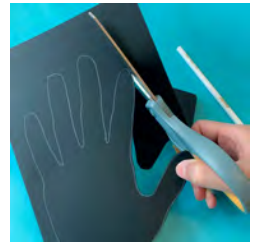
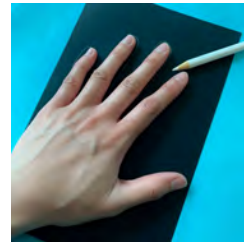
Tape or glue

String or yarn

White crayons or colored pencils (or googly eyes or eye stickers)

## Directions

1. **Fold** a piece of black or brown paper in half and **trace** your hand onto the paper. If you need more room, you can trace your hand onto 2 full-sized pieces of paper instead.
2. **Cut** out your handprint. This should create 2 hand-shaped cut-outs.
3. **Tape or glue** the 2 hands together at the wrist, with both thumbs pointing down. Now you have the spider's body with 8 legs and 2 fangs.
4. **Draw** eyes on your spider using white crayon or colored pencil. Or, you can stick on googly eyes or eye stickers instead. Most spiders have 8 eyes. Some have more or less, but they always have an even number of eyes, like 4 or 6.
5. **Cut** a piece of string or yarn to about the length of your arm and **tape or glue** the string to the back of your spider.
6. **Hang** the spider somewhere around your home, such as in a window or on the refrigerator.





# Scorpion Puppet

Scorpions, like spiders, are arachnids. Scorpions have eight legs and two pincers that help them catch their food. At the end of their tail-like abdomen, scorpions have a venomous stinger that they use to subdue their prey or defend themselves from predators. Make your own scorpion puppet and pretend you are an amazing arachnid!

## Materials

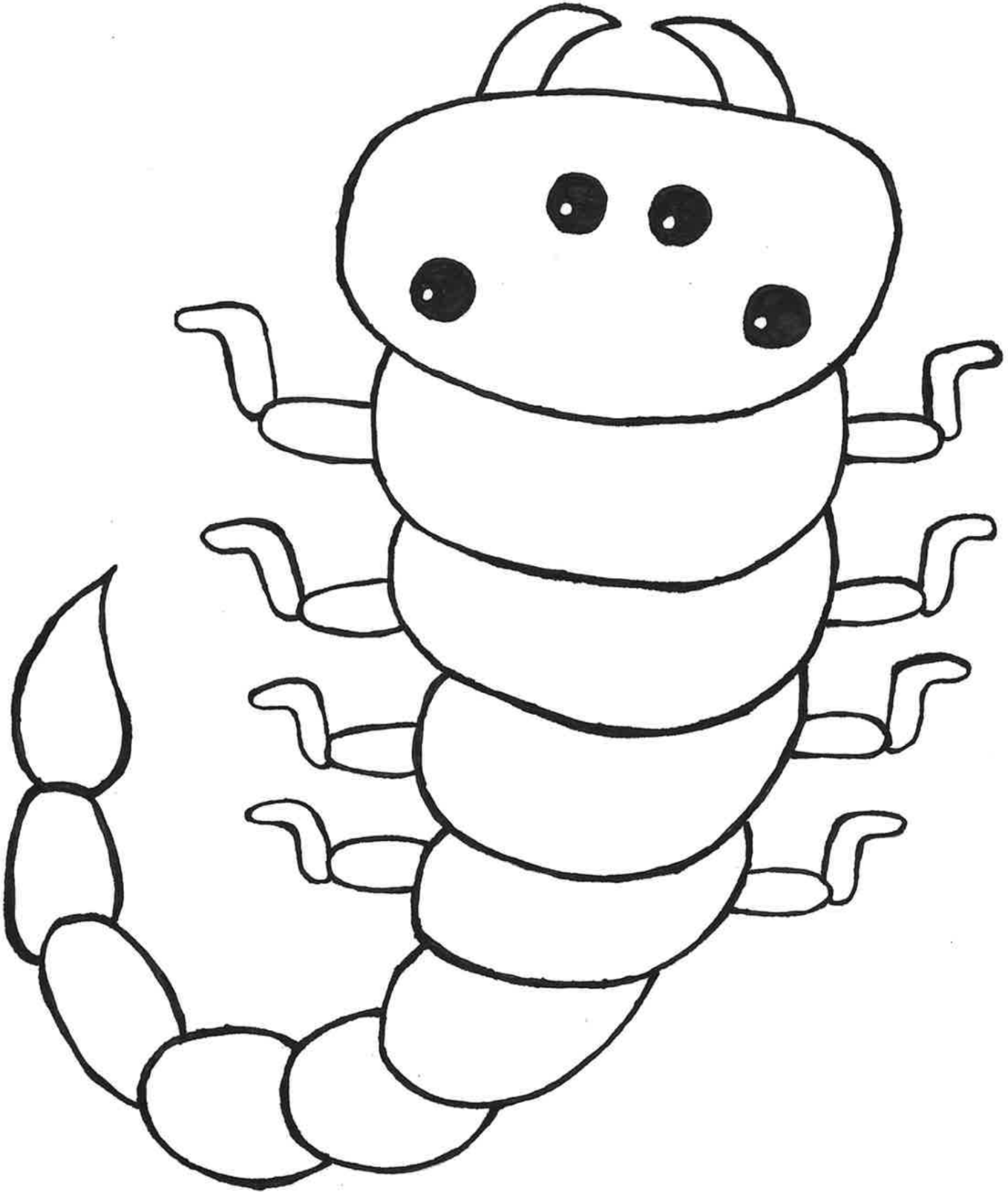
Print-out templates (pages 2 & 3)  
Scissors  
Tape  
Crayons or colored pencils (optional)

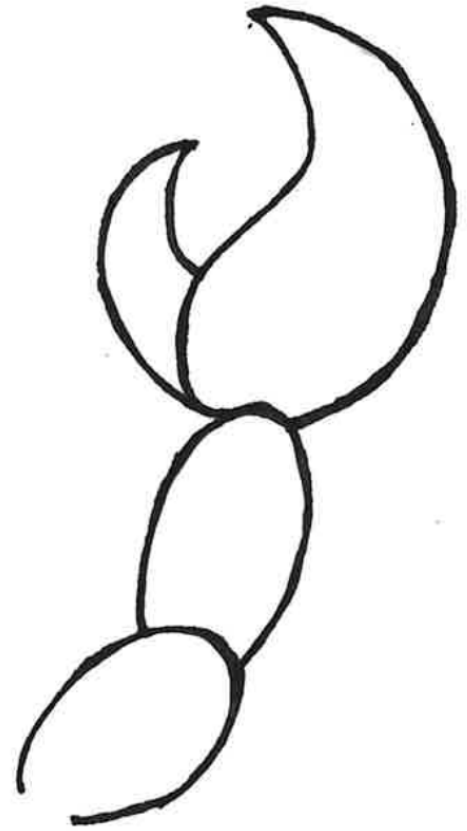
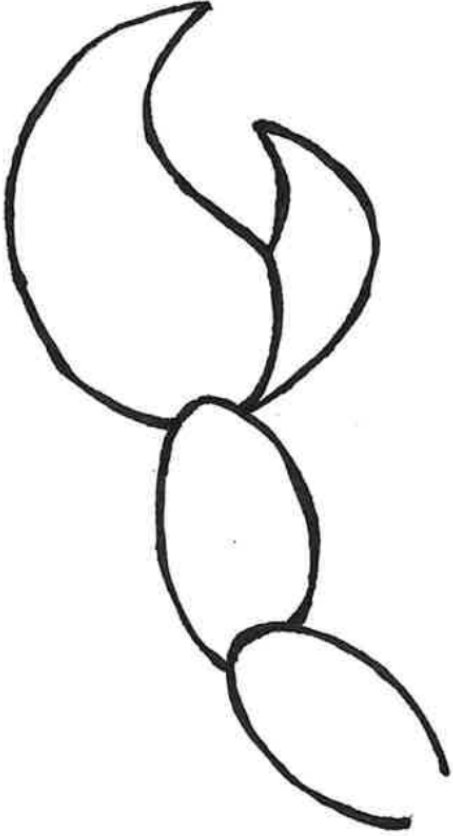
## Directions

1. **Print out** the template on page 2.
2. **Cut out** the scorpion from the template.
3. **Print out** the template on page 3.
4. **Cut out** the scorpion claws from the template. With the excess blank paper from the template, **cut out** 1 to 2 strips of paper about an inch thick. These will be the straps to secure the puppet to your arm.
5. **Color** the scorpion and claws however you'd like.
6. **Glue** the claws of the scorpion head, one on each side.
7. **Tape** the ends of one of the strips of paper together, so it forms a circle.
8. **Tape** the circle to the back of your scorpion, so you'll be able to slide your hand through the hole and wear the puppet on your arm.
9. **Slide** your hand through the straps and pretend you're an amazing arachnid!











# Scorpion Scene

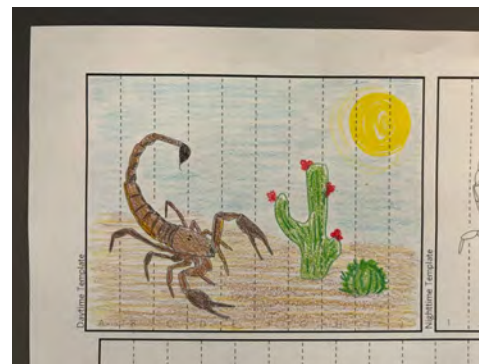
Scorpions fluoresce, or glow, a blue-green color when illuminated by ultraviolet (UV) light or by moonlight. Scientists are not sure exactly why scorpions are fluorescent, but it could be a warning sign to potential predators—or it could be a lure for prey. Color a scorpion and watch their transformation by creating a daytime and a nighttime *agamograph* scene—a unique art piece where the picture seems to change depending on the angle you use to view it. What kind of habitat will your scorpion live in during the day, and what will change at night?

## Materials

Print-out agamograph templates (page 3)  
Crayons, colored pencils, or markers  
Highlighters  
Scissors  
Glue stick

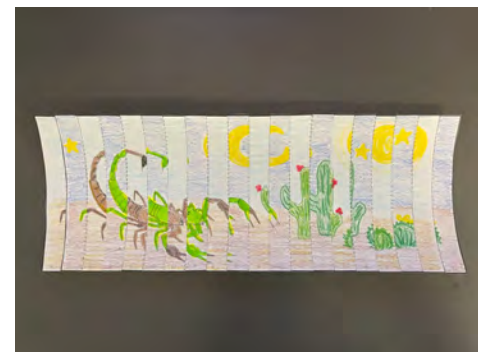
## Directions

1. Print the agamograph templates on page 3.
2. **Color in** the “daytime” scorpion template with crayons, colored pencils, or markers and draw a background for the scorpion. Will your scorpion be in the desert or in the jungle? Will the sun be shining, or will your scorpion be hiding in a cave? Use your imagination!
3. **Color in** the “nighttime” scorpion template using

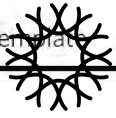


highlighters to mimic the way scorpions fluoresce at night. Then use crayons, colored pencils, or markers to add a background. Is your scorpion exploring under the moonlight?

4. **Cut out** the daytime template, nighttime template, and base template along the dark black border lines.
5. **Cut** the daytime template into strips, following the dotted lines. **Glue** these strips to the corresponding letters on the base template (A on A).
6. **Cut** the nighttime template into strips, following the dotted lines. **Glue** these strips to the corresponding numbers on the base template (1 on 1).
7. **Fold** the agamograph in an accordion shape.
8. Your scorpion scene is complete. Place your agamograph at eye level and slowly move from one side to the other and watch your scorpion go from day to night!







Daytime Template

A  
B  
C  
D  
E  
F  
G  
H  
I  
J

A line drawing of a scorpion is positioned on a set of handwriting lines. The scorpion's body is curved, and its pincers are visible. The illustration is placed between the top solid line and the middle dashed line.

Nighttime Template

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

A line drawing of a scorpion is positioned on a set of handwriting lines. The scorpion's body is curved, and its pincers are visible. The illustration is placed between the top solid line and the middle dashed line.

A  
1  
B  
2  
C  
3  
D  
4  
E  
5  
F  
6  
G  
7  
H  
8  
I  
9  
J  
10

A large vertical rectangle containing ten sets of handwriting lines. Each set consists of a top solid line, a middle dashed line, and a bottom solid line. The letters A through J and numbers 1 through 10 are printed at the beginning of each line set.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

A large vertical rectangle containing ten sets of handwriting lines. Each set consists of a top solid line, a middle dashed line, and a bottom solid line. The numbers 1 through 10 are printed at the beginning of each line set.



# Escena de escorpión

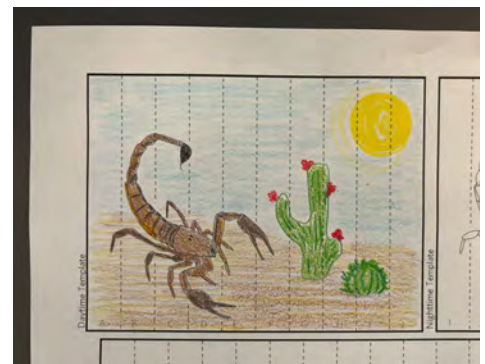
Los escorpiones son fluorescentes o brillan con un color azul verdoso cuando son iluminados por la luz ultravioleta (UV) o la luz de la luna. Grupos científicos no saben exactamente por qué los escorpiones son fluorescentes, pero podría ser una señal de advertencia para posibles depredadores, o un señuelo para las presas. Colorea un escorpión y observa su transformación creando una escena de *agamógrafo* diurna y nocturna, una obra de arte única en que la imagen parece cambiar dependiendo del ángulo en que lo ves. ¿Qué tipo de hábitat tendrá tu escorpión durante el día y qué cambiará por la noche?

## Materiales

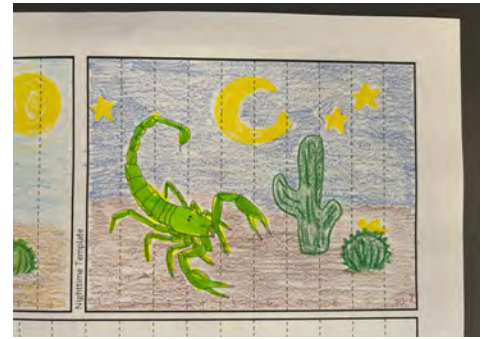
Imprime plantillas de agamógrafos (página 3)  
Crayones, lapices de color, o marcadores  
Resaltador  
Tijeras  
Barra de pegamento

## Instrucciones

1. Imprime las plantillas de agamógrafos en la página
2. **Colorea** la plantilla del escorpión “de día” con crayones, lapices de color, o marcadores y dibuje un fondo para el escorpión. ¿Va a estar tu escorpión en el desierto o en la jungla? Va a estar el sol brillando o tu escorpión va a estar escondido en una cueva? Usa tu imaginación!



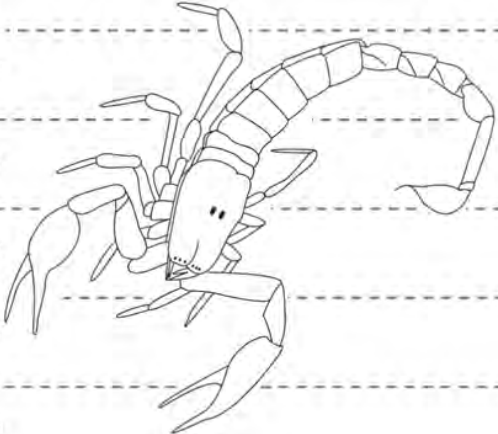
3. **Colorea** la plantilla del escorpión “de noche” usando el resaltador para imitar la manera en que los escorpiones son fluorescentes durante la noche. Después use crayones, lapices de color, o marcadores para añadir un fondo. ¿Está tu escorpión explorando bajo la luz de la luna?
4. **Corta** la plantilla de día, la plantilla de noche, y la plantilla base siguiendo las líneas del borde negro oscuro.
5. **Corta** la plantilla de día en tiras, siguiendo las líneas punteadas. Pega estas tiras a las letras correspondientes en la base de la plantilla (A sobre A).
6. **Corta** la plantilla de noche en tiras, siguiendo las líneas punteadas. Pega estas tiras a los números correspondientes en la base de la plantilla (1 sobre 1).
7. **Dobla** el agamógrafo en forma de acordeón.
8. Tu escena de escorpión está completa. Pon tu agamógrafo a la misma altura de tus ojos y muévete lentamente de un lado al otro y mira a tu escorpión pasar de día a noche!





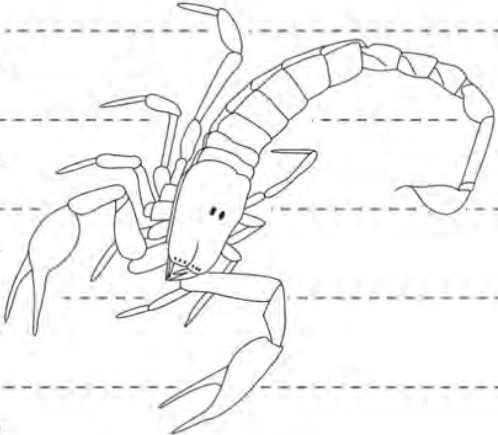
A 1  
B 2  
C 3  
D 4  
E 5  
F 6  
G 7  
H 8  
I 9  
J 10

Daytime Template



A  
B  
C  
D  
E  
F  
G  
H  
I  
J

Nighttime Template



1  
2  
3  
4  
5  
6  
7  
8  
9  
10





# Spiderweb String Art

Orb-weaving spiders spin intricate webs to catch their prey. In this craft, spin your own web-inspired design to decorate your home.

*Caution: This craft involves using sharp push pins. Please be careful and ask an adult for help if needed.*

## Materials

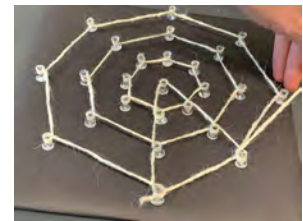
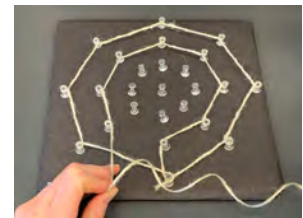
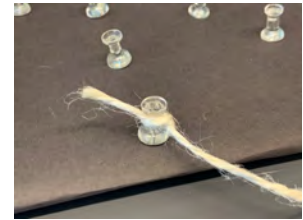
- 3 cardboard squares
- Liquid school glue
- 11x17" sheet of construction paper, or solid-colored wrapping paper
- Tape
- 25 pushpins
- Spool of string or yarn
- Crayons or colored pencils (optional)

## Directions

1. **Cut** 3 pieces of cardboard into 9" squares.
2. **Glue** all 3 cardboard squares on top of each other using school glue. Allow to dry for at least 10 minutes.
3. **Test** to make sure that the stack of cardboard is deep enough by pushing a pin all the way into the cardboard. If the pin sticks out the back, then glue a fourth cardboard square to the bottom of the stack.
4. **Wrap** the cardboard in construction paper and tape it to the back.



5. Push the first pin into the middle of the square. This will be the center of the web. Then, **add** the rest of the pins to the square, in the pattern described below. *Tip: add pins in a straight line and leave an equal amount of space between each pin.*
  - 3 pins above the middle pin
  - 3 pins below the middle pin
  - 3 pins to the left of the middle pin
  - 3 pins to the right of the middle pin
  - 3 pins in each diagonal direction
6. **Tie** one end of the string to the bottom pin. *Tip: hold onto the string with one hand and use your other hand to hold the bottom pin down to keep it from popping up as you work.*
7. **Wrap** the string once around the next pin to the right, then wrap the string around the next pin to the right. Move from pin to pin, around the outside of the web until you make one complete circle.
8. **Repeat**, creating the next 2 inner circles of the web.
9. **Add** a line of string radiating out from the center pin toward each of the pins in the outermost circle.
10. **Cut** the string when you get to the end of the web and **tie** the end to the nearest pin.
11. Optional: **Draw** a spider into the web.





# Silk Investigation

Spider silk is an incredible substance. Stronger than steel but pliable as soft cotton, it can stretch like a rubber band and snap back to its original size without breaking! Be an arachnologist (a spider scientist) and investigate this amazing material found all around us. What types of spider silk can you find?

## Materials

Pencil  
Photos of spider silk (pages 3-6)  
Photos of web types (pages 7-9)  
Paper to record observations  
Camera (optional)



## Directions

- Observe** the close-up photos of spider silk from 2 different spiders on pages 3-6. **Think about** the following questions and **write down** your observations.
  - Examine the photo of the jumping spider silk and molt.  
*What does the color and texture look like?*
  - Examine the photo of the fishing spider silk and egg case.  
*What does the color and texture look like?*  
*Can you find any baby spiders?*
  - Which silk looks stickier?* Spiders make different types of silk.  
Sticky silk can capture prey.  
*Why would a spider want silk that isn't sticky?*
- Look** at the 5 examples of web types on pages 7-9. **Think about** the following questions and **write down** your observations. *Have you seen any webs that look like these before? Where have you found spiders or spiderwebs? What similarities and differences do you notice about the webs on pages 7-9?*

### Styles of webs pictured on pages 7-9

- Sheet: a flat web often pulled downward at a few anchor points.
  - Tangle: there is organization in the seeming chaos of this web.
  - Tube: a tunnel or socklike web structure for the spider to retreat with signal thread around the entrance. These webs are often found in cracks or crevices of buildings.
  - Orb: Using a central point the silk has a circular, radial pattern extending outward.
  - Trapdoor: a burrow in the ground lined with silk. A door to cover the burrow is often found nearby.
3. **Explore**, *with an adult's permission*, the area around your house, street, or local park for spiderwebs. *How many different styles of webs can you find?*
4. Challenge: **Draw** the webs or take pictures of them. *With an adult's permission*, **upload photos** of spiders to [iNaturalist](#) or [Seek](#) apps to find out more about them and share with the scientific community.

## The Science of Silk

Spiders evolved to spin silk as an elaborate hunting strategy. Inside the spider's abdomen different glands create different silks: sticky and non-sticky strands, silk to keep their eggs safe, and silk to escape predators. To make silk, spiders use their internal organ, the silk gland. Silk starts as a liquid inside the gland and solidifies as it exits the spider's spinneret.

### Some uses of silk

- Swathing silk can wrap up prey or egg sacs to keep them safe.
- Dry strands are used for web scaffolding so spiders can climb through their web without getting stuck.
- Sticky droplets of silk are added to webs to ensnare prey.
- Cribellate or fuzzy silk isn't sticky but latches on like hooks to the exoskeleton of prey.
- Ultraviolet (UV) reflective strands woven into webs in "x" shapes reflect UV light, deterring birds from flying into their webs.

Further reading:

[Field Guide to the Spiders of California and the Pacific Coast States](#)



## Jumping Spider Silk and Molt







## Fishing Spider Silk and Egg Case







## Sheet Web



## Tangle Web



## Tube Web (*Can you find the spider?*)





## Orb Web



## Trapdoor Burrow with Silk (*Can you find the door?*)





# Investigación de la seda

La seda de araña es una sustancia increíble. Más fuerte que acero pero flexible como algodón suave, se puede estirar como una banda elástica y volverse a su tamaño original sin romperse. Sea un aracnólogo (un científico que estudia arañas) e investiga este material sorprendente que se encuentra alrededor de nosotros. ¿Qué tipo de seda de araña puedes encontrar?

## Materiales

Lapiz

Fotos de seda de araña (páginas 3-6)

Fotos de tipos de telas (páginas 7-10)

Papel para grabar tus observaciones

Camera (opcional)



## Instrucciones

1. **Observa** de cerca fotos de la seda de araña de dos diferentes arañas en página 3-6. **Piensa sobre** las siguientes preguntas y **apunta** tus observaciones..
  - a. Examina la foto de la seda y la muda de la araña saltarina. *¿Cómo es el color y la textura?*
  - b. Examina la foto de la seda y la bolsa de huevos de una araña pescadora. *¿Cómo es el color y la textura? ¿Puedes encontrar arañas bebés? Examine the photo of the fishing spider silk and egg case. What does the color and texture look like? Can you find any baby spiders?*
  - c. *¿Qué seda te parece más pegajosa?* Las arañas pueden producir diferentes tipos de seda. La seda pegajosa puede capturar presas. *Porque una araña va a querer seda que no es pegajosa?*
2. **Examina** los 5 ejemplos de telas en páginas 7-9. **Piensa sobre** las siguientes preguntas y **apunta** tus observaciones. *¿Has visto telas que se parezcan a estas? ¿A dónde has encontrado arañas o telas de arañas? ¿Qué similitudes y diferencias has notado sobre las telas en página 7-9?*

### Estilos de telas que aparecen en páginas 7-9

- Hoja: una tela plana que está jalada hacia el inferior con unos pocos puntos de anclaje.
  - Enredado: hay organización en esta aparente tela de caos.
  - Tubo: una tela en forma de un túnel o calcetín con un hilo de señal en frente de la entrada en que la araña se pueda retirar. Estas telas son encontradas normalmente en las grietas o hendiduras de edificios.
  - Orbe: Usando un punto central, la seda tiene un patrón circular, radial que se extiende al exterior.
  - Trampilla: una madriguera en el suelo que está llena de seda. Una puerta para cubrir la madriguera es normalmente encontrada cerca.
3. **Explora**, con el permiso de un adulto, la área alrededor de tu casa, calle, o parque local para telas de arañas. *¿Cuántos estilos de telas puedes encontrar?*
4. Desafío: **Dibuja** las telas o toma fotos. *Con el permiso de un adulto, carga las fotos* de las arañas a la apps [iNaturalist](#) o [Seek](#) para encontrar más sobre ellas y compartir con la comunidad científica.

## La Ciencia de seda

Las arañas evolucionaron para tejer seda como una elaborada estrategia de casar. Adentro el abdomen de las arañas hay diferentes glándulas que producen diferentes tipos de seda: hebras pegajosa y no pegajosa, seda para mantener sus huevos seguros, y seda para escapar de depredadores. Para hacer su seda, las arañas usan el organo interno, la glándula que produce seda. La seda empieza como un líquido dentro de la glándula y se solidifica cuando se sale de la hilera de la araña

### Algunos usos de seda

- La seda envolvente puede envolver su presa o sacos de huevos para mantenerlos seguros.
- Las hebras secas son usadas como andamio de tela para que las arañas se puedan mover en su tela sin atascarse.
- Gotas de seda pegajosas se añaden a la tela para atrapar la presa.
- La seda de cribelo o velloso no es pegajosa pero se engancha en el exoesqueleto de la presa.
- Hebras que reflejan rayos de Ultravioleta (UV) que son tejida en la tela en forma de "x" reflejan los rayos de luz de ultravioleta, disuadiendo que aves vuelen hacia la tela.

Mas informacion:

[Field Guide to the Spiders of California and the Pacific Coast States](#)



## Araña saltarina seda y muda







## Araña pescadora seda y bolsa de huevos







## Tela de hoja





## Tela de enredo



## Tela de tubo (Puedes encontrar la araña?)





## Tela de orbe



## Madriguera con trampilla y seda (Puedes encontrar la puerta?)

