



Spider Wall Walker

Ever wondered what it's like to be an animal that can climb a wall? Spiders are competent engineers that have the skills and can produce a material that allows them to design resilient and beneficial webs.

Spider silk is made from chemical properties that make it strong and light. In fact, it's stronger than steel! It also has tensile strength, meaning it can be stretched a lot before it breaks. Scientists are still trying to figure out precisely what gives the silk both strength and elasticity, but to date, they have not yet solved the riddle.

A spider is capable of making up to seven different types of silk. However, most species make four to five types. All spiders produce silk, but not all spiders spin webs. Silk is used for climbing, to create webs, to build smooth walls in burrows, build egg sacs, and wrap up dinner. For those that make webs, the web is an essential use of spider silk as it protects them from predators and helps them to catch a meal. A spider can detect vibrations when something touches the threads of the web, alerting it to danger or to prey animals that have become entangled.

Most spiders have four or more openings, or glands, on their abdomen called spinnerets. When the spider releases the silk, it looks like one thread, but it is many thin threads that stick together. As soon as this liquid silk hits the air, it hardens. Many spiders use their silk for something called 'draglines.' A dragline is a rope-like web that helps the spider climb back home if they fall or let themselves drop.

Make this craft to see how a spider's dragline might work.

Materials:

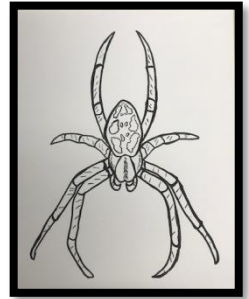
- Attached spider pattern (copied onto cardstock or construction paper)
- A wall
- Crayons
- A paper or plastic straw
- Scissors
- Yarn or thread



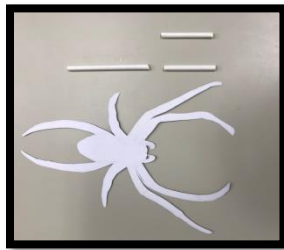
- Googly eyes (2 larger ones and 6 tiny ones)
- Tape or glue

Instructions:

1. Copy the attached pattern onto cardstock or construction paper.
2. Figure out which flat wall you are going to use.
3. Color your spider and cut it out.



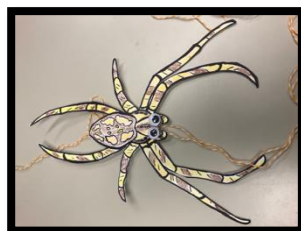
4. Cut the drinking straw into two two-inch pieces.



5. Glue or tape the two straws to the underside of your spider. The should be going in the direction of the spider's head.



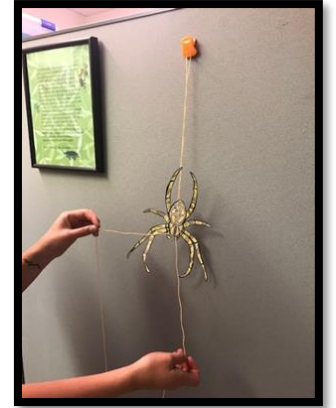
6. Attach the googly eyes to the spider's head on the top side of the spider (They usually have eight eyes: two enormous front eyes to get a clear, color image and judge distance, and extra side eyes to detect when something is moving.)



7. Cut a piece of string 10-15 feet long. String each end through one of the straws.



8. Find the middle point of the string and tape it to the wall. Now gently pull your spider up the wall by pulling the strands apart. Once the spider reaches the top of the silk (thread), move the strings together and let the spider drop towards the ground.



Extension:

1. Using a stopwatch, tape your string at different heights and see if there is a difference in how fast your spider moves down the string. Try using different types of string. Which one allows your spider to move the quickest?
2. Over time, spiders have developed a bunch of unique adaptations to help them survive and avoid predators – not just their sticky webs
 - Using the library or the internet, under your parent's supervision, spend some time researching the many adaptations (body parts or behaviors) of spiders and how these adaptations help them to survive in the many habitats in which they reside.

