

Are you looking for something to do to keep your brain active and engaged? We're here to help with Science at Home! You can do these fun science activities using commonly found items. You can also visit us at the Museum's [Science at Home](#) page for additional resources.

Make an Orb Web



Materials Needed:

Yarn, strings, ribbon or any type of thread that can be used as "silk"
Transparent tape
Scissors

What We've Learned

Most orb weavers build a vertical, flat web between two structures. To stretch the distance between two surfaces, the spider uses wind to drag a silk line from one anchor point to the other in a process called "kiting." It then secretes different kinds of silk through its spinnerets to create the framework and sticky and non-sticky spirals of the web. The silk is made from proteins produced in six different glands located in the spider's abdomen. The web can have as many as 30 loops in its spiral and is a perfect bug catcher. Orb weaver's webs are usually very clean since they eat their web every evening and make a new one in the same spot or nearby.

Instructions:



Step 1: Find a place to build your web. Start making a frame by tying yarn to anchor point 1, drag and tie it to an opposite anchor point 2. Repeat two times to create a thick "bridge thread".



Step 2: Take one of the horizontal draglines from the "bridge thread" and pull it down to create a triangle. Use knots to attach a thread to the bottom tip of the triangle and secure it to anchor point 3.



Step 3: Complete the frame by using yarn to connect the top two anchor points to the bottom anchor point 3. Cut three small pieces of yarn and secure them with clear tape into the three corners of the triangle.



Step 4: To create the seven radius threads, cut seven pieces of thread the same length as the space between the sides of the triangle and the center. Use tape or tie the three pieces of thread on the bridge thread and connect them to the center. Tie two pieces of thread on either side of the triangle and secure them to the center.



Step 5: A) Tape one end of the yarn to the center. Secure the yarn to the radius threads as you spiral outwards in a clockwise direction. This is the **non-sticky spiral framework** that spiders use to build the sticky catching spiral. **B)** To make the catch spiral, take yarn and attach it to the center. Follow the first spiral and tape the yarn to the radius threads as you spiral outwards.



Everyday Connections

The black and yellow garden spider or *Argiope aurantia*, is one of the most beautiful non-venomous orb weavers in NC. It is famous for the vertical band of silk that zigzags through the center of the web. This structure is called "stabilimentum." The web is very strong and has exceptional mechanical properties. Spider silk is very elastic, heat resistant and stronger than steel! No wonder it can withstand the impact of flying insects hitting the web.

Having Fun?

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