

Spider Web Engineering



One of the coolest adaptations of spiders is their ability to use webs to capture prey. The webs help spiders because they allow them to catch prey without having to run them down. As a result, webs provide an energy efficient way of gathering food.



Spider webs are made of silk that is stronger than the same weight of steel and yet much more flexible. Spiders produce this silk from spinneret glands. Several different types of silk are produced by each spider.

Spiders build their webs in an organized manner. Spiders start by producing a sticky thread to drift on the breeze that is blowing. When the thread sticks to an object on the other end, the spider tightens and strengthens this first strand. The spider then makes V-shaped strands that extend outwardly from the center. Finally, the spider strengthens the center of the web with circular strands.



These amazing web creations have been studied by scientists for centuries. Recently, they have been able to create a new material that mimics the spider silk's strength and stretchiness. This material offers the possibility of improving the strength and performance of lots of products including helmets, body armor, and airplane wings.

In this STEM Challenge, your job is to create and test a model of a spider web that spans the gap needed for the best hunting possible. In designing your web, you should engineer like a spider who starts with the foundational strand to bridge the gap, adds the outward ones and then ties things together with the circular strands. Happy hunting.