

Putting the amazing, fun, and powerful world of Science, Technology, Engineering & Math (STEM) in the hands of kids.



Newsletter

Weird but True

Pistol shrimp use jets of water to emit sonic booms as loud as the Concorde.

KNE STEM Talk Links

[Alexa: The Toughest Creature on Earth](#)

[Tyler: My Robot Creation](#)

[Erika: Fossil Hunting in NJ](#)

Brain Teaser: How many different sequences can you lay out 5 different items like playing cards?

54321, 12345, 34521, 24135, etc...

"In physics we don't prove theories, we rule out theories, there is always the ability to dig deeper."

- Lisa Randall

The Amazing World of Spiders

By Alexa (age 10)

Have you ever noticed that most people don't like spiders? Spiders are actually very important because they control the insect population. Most people know the basic facts. Spiders are not insects but are arachnids. They have an exoskeleton and 8 legs. They have a cephalothorax and abdomen. People probably know a little more. The only thing is, some people get a couple of facts wrong. For example, some people think that all spiders make webs, but actually, not all of them do. All spiders make silk, but only some make webs. Others build tunnels.



There are also many interesting facts that people don't know about. Did you know that daddy long legs are not spiders, but part of an order called opiliones? Or maybe that a spiders silk is liquid in their bodies, but becomes solid when it contact with the air? Can you

even guess how many species of spider there are? There are over 46,000! That is a lot. There are so many spiders that they live on every single continent on earth except for Antarctica.

As I said before, most people know that spiders are not insects but are arachnids. But did you know that insects, arachnids, and even crustaceans (like shrimp and lobsters) are part of a phylum called arthropods?



Spiders are like insects but are also different in many ways. One difference is that insects have 3 body sections, the head, thorax, and abdomen. Spiders only have 2 - the cephalothorax (a combination of the head and thorax) and the abdomen. Insects have antennae to sense things, but spiders have hairs covering their body.

Spiders have 8 legs and insects only have 6. Spiders make silk and insects don't. Some insects fly, but the only time that most spiders are floating in the air is when they are baby spiders. When most spiders are babies, they float to a new place on a piece of silk. This is called ballooning.

There are also things that make spiders and insects similar. First, they all have an exoskeleton, a head, thorax, and abdomen (though a spider's head and thorax are joined). They are both arthropods. They are both part of the same food chain. Spiders and insects both shed.

I have only covered a few of the facts. There is so much to learn about spiders and **you** can discover more.

STEM Talk Recap

Thank you to everyone that came to the first KNE STEM Talk on Saturday April 16th! All of our elementary through high school-aged presenters did an incredible job sharing their STEM experiences in front of a live audience of ~40 people. Since this was our first STEM Talk, we wanted to keep it small (we only advertised to all of you!). The size worked out great for a first event. You can check out some of the presentations at the STEM links above.

Our brave 7 and 8 year old presenters kicked off the afternoon discussing simple machines and electronic waste like nickel cadmium batteries in cell phones. The other elementary and middle school students presented about microscopic tardigrades, building and programming a robot, finding ancient fossils in New Jersey, and distant black holes. Then the high school students wrapped up the event with their science research.

Presenters and attendees alike were excited about this new event and have already asked

about when we'll do it again. We were thrilled to see all of the kids rise to the challenge of speaking in front of a live audience. They all did an amazing job! We are looking at scheduling another STEM Talk in the future, probably this fall. Let us know if you know a kid who would want to share their love for STEM.

Save the Conch!

By Erika (age 13)

You've probably seen those big, beautiful white and beige shells with pink insides in a gift shop by the beach. Have you ever wondered about the creatures that lived inside the shells? What were they? How did they make such pretty shells? Never fear! Your questions are about to be answered.



Conchs are mollusks. A mollusk is an animal such as an octopus, a squid, or a snail. Conchs start out life as veligers which are microscopic, and they grow shells after one month. They continue to grow and at year four, they start to grow a lip on the outside of their shells. To tell the difference in gender, the conchs have to be hanging out of the shells and you can only tell based on genitalia.

In just about every one of their natural habitats except the Turks and Caicos Islands (TCI) they are endangered. Overfishing could lead to the extinction of the species because they are wanted for their meat and shells. They can live up to thirty years in the wild, assuming that they aren't eaten, but they can live up to forty in captivity.



You can learn all of this from the one and only conch farm in the world, [Caicos Conch Farm](#). They raise conch to make sure they don't go extinct and to figure out more about their life cycle. To harvest them on the farm, they have to be at least four years old. In the wild, regulations state they have to be at least eight years old to ensure they have time to reproduce. The farm owns sixty-five acres in the water and ten acres on land. They raise the conchs on land for the first two years of their life, and in the water after that and have conchs up to fourteen years old. The owners of the farm have also started raising fish so they can breed them for the local restaurants.

Overall, they aren't just a delicious food. Conchs are fascinating, snail-like creatures and they are endangered. Save the conch!

Brain Teaser Answer: 5 cards can be laid out in 120 different ways using probability:

$$5 \times 4 \times 3 \times 2 \times 1 = 120$$

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