

Read the article “The Smart Octopus” before answering Numbers 1 through 5.

The Smart Octopus

Scientists have known for a long time that chimpanzees are intelligent and that dolphins are very smart. Anyone can look at cats and dogs and tell that they have brains and use them. These pets also have emotions like happiness or sadness. They are playful, and each of these animals has its own personality. Scientists have found that an unlikely animal has been showing signs of intelligence: the octopus.

The octopus lives in the ocean and does not have a backbone. Its bag-like body and eight long tentacles flow along freely as it swims in the ocean water. Octopus tentacles have suckers along the bottom that can grab and hold things with great strength.

The octopus belongs to the same animal family as clams. Clams do not have brains and cannot move freely. They sit on the ocean floor inside their shells and wait for food to come to them.

So how did the octopus become so unlike a clam? Why does it have a brain? Scientists think that long ago the octopus once had a shell and no brain. Then, at some point, the octopus lost the shell. In order to survive, the animal developed a brain. For some animals, the octopus was prey. Without a shell, it had little protection from animals that hunted it. It also had to figure out how to catch its own food.

Not having a shell has its advantages. The octopus can move freely and hunt for its food. It can dart this way and that, and it might hide and pop out when a meal passes by. It can also swim and follow its prey in a high-speed chase.

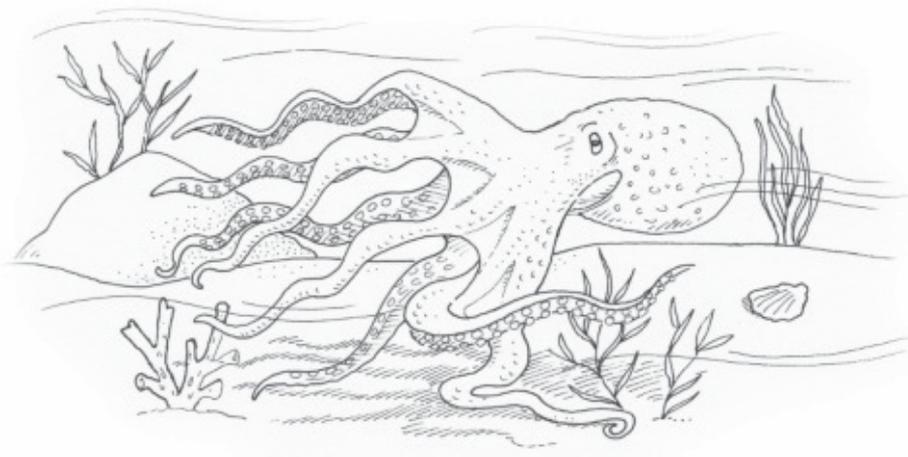
In order to prove that the octopus has a brain, scientists have been keeping an eye on them for a long time. They have also performed tests. One test proved that the octopus knows the difference between two people. They put eight octopuses into a tank, and then two people came near the tank. One person fed the octopuses and the other one touched them with a stick. Within a week, the octopuses moved toward the feeder and stayed away from the person who annoyed them.

Another scientist gave octopuses puzzles, or little boxes with latches. The octopuses figured out how to open the latches!

One strange thing about octopus intelligence is that it's not just in its brain—the tentacles have minds of their own, too! For example, after an arm is cut off from the body, it will still look for food. When it catches it, the arm will take the food to where the mouth should be!

Only intelligent animals play, and the octopus is playful like dogs, cats, and other pets. It plays with toys like floating balls and plastic toys.

The octopus also knows how to protect itself. When it is resting, it will find an open place in the rocks where it can hide. An octopus has even been seen placing smaller rocks in front of its hideaway. Now that's using its brain!



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Now answer Numbers 1 through 5. Base your answers on “The Smart Octopus.”

- 1 This question has two parts. First, answer part A. Then, answer part B.

Part A: What is the **main** idea of the article?

- (A) Scientists have proven that octopuses are intelligent.
- (B) The octopus can be a very playful sea animal at times.
- (C) The octopus is an interesting animal that has eight arms.
- (D) Chimpanzees, dolphins, octopuses, cats, and dogs are smart.

Part B: Which sentence from the article **best** supports your answer in part A?

- (A) “Scientists have known for a long time that chimpanzees are intelligent and that dolphins are very smart.”
- (B) “Scientists have found that an unlikely animal has been showing signs of intelligence: the octopus.”
- (C) “The octopus lives in the ocean and does not have a backbone.”
- (D) “So how did the octopus become so unlike a clam?”

- 2 Why does the author compare animals in the first paragraph of the article?

- (A) to explain that scientists have not found any signs of intelligence
- (B) to explain that the dolphin is the most intelligent animal
- (C) to explain that many types of animals are smart
- (D) to explain that animals have no personalities

- 3** This question has two parts. First, answer part A. Then, answer part B.

Part A: Read the sentences from the article.

These pets also have emotions like happiness or sadness. They are playful, and each of these animals has its own personality.

What does the word emotions **most likely** mean?

- (A) beliefs
- (B) feelings
- (C) movements
- (D) problems

Part B: Which words from the sentences **best** help to explain the meaning of emotions? Pick **two** words.

- (A) pets
- (B) happiness
- (C) sadness
- (D) animals
- (E) own
- (F) personality

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4 According to the article, the octopus is **different** from a clam in a few ways. Pick **two** sentences that tell how the octopus is different.

- (A) It has a brain.
- (B) It is a sea animal.
- (C) It has no tentacles.
- (D) It can move around freely.
- (E) It waits for food to come to it.
- (F) It belongs to a different animal family.

5 Circle the word in the sentences that helps to explain what the word prey means.

For some animals, the octopus was prey. Without a shell, it had little protection from animals that hunted it.

Read the article “Wonderful Spider Webs” before answering Numbers 6 through 10.

Wonderful Spider Webs

Recently, a biologist found the largest spider web ever seen. It is also the strongest. The Darwin’s bark spider spins giant webs that can be nearly thirty square feet. That’s five feet tall and six feet wide. But the big web needs help to stay up. The strands that support these webs can be eighty-two feet in length.

To build a web that large, the Darwin’s bark spider makes a super strong silk. This material is twice as strong as other spiders’ silk. One reason it has to be strong is because the spiders spin them over small streams. Many insects fly over water looking for food. One web can catch thirty mosquitoes at a time. Scientists are still trying to understand how a spider the size of a coin can get its lines across a wide river.

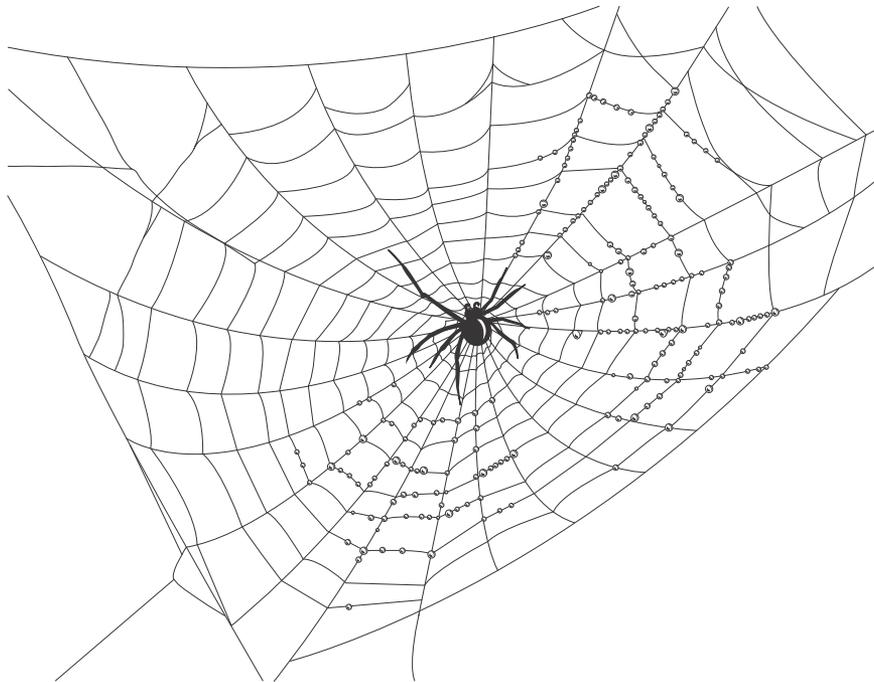
The golden silk spider creates another amazing web. In the sunlight, its strands look like finely spun gold. The web is also super sticky. If you walk into one of these webs you will have a mess to clean up. The sticky silk is added after the spider builds a base of regular silk. These webs have to be taken down and rebuilt every so often because the stickiness wears out in the rain and when it collects dust. The spider actually eats the old web and reuses the material to build more webs.

Golden silk spiders also place chemicals on the web to keep ants away. They don’t want other animals stealing their food. They build large webs in tree branches or on the edges of forests. These webs can be more than three feet across. The spiders also remove parts of their webs in high winds to prevent damage. These spiders make barrier webs to keep leaves away and protect the web from things blowing in the air.

Another fascinating web is the funnel spider's net. Unlike the golden silk spider, funnel spiders build a web shaped like a cone. It is small, less than six inches wide. Humans won't walk into this kind of web. This is a good thing because funnel spiders are very poisonous. They have to be because their silk is not sticky. Funnel spiders can feel a beetle or cockroach walking on their nets. Then they run out and bite their meal.

The spider hides inside a silk passageway in the middle of the funnel. It also creates "trip-lines" that warn the spider when something is near. Rain often floods these webs. Funnel spiders cannot swim. They are well protected under rocks or logs.

A spider's silk has amazing strength, so it is something humans want to use. Golden silk spider webs have been used as fishing nets. Scientists could rebuild parts of the human body with this silk. It is strong but also can stretch. A mesh of spider silk could repair damaged skin. Who knows what new ideas will dawn on scientists in the future.



Now answer Numbers 6 through 10. Base your answers on “Wonderful Spider Webs.”

- 6 This question has two parts. First, answer part A. Then, answer part B.

Part A: Read the sentences from the article.

But the big web needs help to stay up. The strands that support these webs can be eighty-two feet in length.

What does the word support **most likely** mean in the sentence?

- (A) prove
- (B) remove
- (C) hold up
- (D) pay out

Part B: Which phrase from the sentences **best** helps to explain what support means?

- (A) “the big web”
- (B) “help to stay up”
- (C) “these webs can be”
- (D) “eighty-two feet”

- 7 How are the ideas connected in the second and third paragraphs of the article?

- (A) They show why the Darwin’s bark spider makes large webs.
- (B) They show how spider webs are used to catch food.
- (C) They show the problem with very large webs.
- (D) They show how two spiders are different.

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- 8 Compare and contrast the golden silk spider’s web and the Darwin bark spider’s web. Sort the details in the list and write them in the correct boxes in the chart. Fill in the chart with all of the details from the list.

Golden Silk Spider’s Web	Both Spider Webs	Darwin Bark Spider’s Web

Details:

Is very sticky

Looks like gold

Can be very large

Used to catch food

Made of very strong silk

Found over small streams

Often found in tree branches

9 Read the sentence from the article.

The spiders also remove parts of their webs in high winds to prevent damage.

What does the word damage **most likely** suggest?

- Ⓐ loss of prey
- Ⓑ catching prey
- Ⓒ harm to the web
- Ⓓ rebuilding the web

10 Pick **two** reasons why the author talks about different types of webs in the article.

- Ⓐ to show how webs are rebuilt
- Ⓑ to show how webs can be similar
- Ⓒ to show problems caused by sticky webs
- Ⓓ to show the way spiders build their webs step-by-step
- Ⓔ to show how webs can be very different from each other
- Ⓕ to show what scientists have learned about webs throughout time



