mystery science

Grades K-5
Mini-Lesson + Activity: “Which animal has the biggest heart?”

VIDEO TRANSCRIPT

MINI-LESSON VIDEO 1

[Video Call]

- Hi, Doug!

- Hi, Husam!

- I have a question for you. Which animal has the biggest heart?

- That's a great question.

You probably heard a lot about human hearts, but what about animals? Do all animals even have hearts? Well, most do, but they don't always work or look like ours. Like, check out this octopus. Here's a drawing of what an octopus looks like on the inside. You notice anything? An octopus doesn't have just one heart. It has three hearts. One heart pumps blood to its body, and the other to pump blood to its gills so that it can breathe underwater. And get this: its blood is blue. And see this starfish? It doesn't even have a heart at all. Whoa, wait a second! Is that even possible? Don't animals need a heart to stay alive? Well, it's true that most animals need a heart. A heart pumps blood to all the different parts of an animal's body. And that's hugely important because blood carries oxygen and nutrients that an animal's body needs to survive. So what about a starfish then? Don't their bodies need oxygen and nutrients, too? They do, but

instead of a heart to pump blood, starfish have tiny hairs called cilia throughout their body that swish back and forth constantly, swishing around the oxygen and nutrients that their bodies need from the water around it. So, as far as animal hearts go, starfish, with no hearts at all, might be some of the most unusual. But of the animals that do have hearts, which animal has the biggest heart? Before I say anything more, what do you think?

MINI-LESSON VIDEO 2

I'm not sure how you answered, but I'm guessing your answer depended on whether you were thinking about land animals or animals that live in the ocean, or maybe even you thought of extinct animals like dinosaurs. For example, if you were thinking about land animals you might've thought of a giraffe. A giraffe doesn't have the biggest heart, but it definitely has one of the strongest. See how the left side of its heart is thicker than the right side, that's muscle. It turns out the left side of a giraffe's heart is the part in charge of pumping blood all the way up, its super long neck to its brain. So that part of its heart needs to be super strong, that's why it's bigger. And what about elephants, they must have a huge heart, right? They do, in fact, an African elephant has the biggest heart of all living land animals. Its heart needs to pump blood all over its huge body. Well, our human hearts only weigh about, as much as two apples. An elephant's heart can weigh as much as a child, your size. But well, an elephant's heart is really big, it doesn't even come close to being the biggest heart of all. No, for that, we would have to consider other types of animals, maybe animals that don't exist anymore, or maybe animals that don't live on land. Hmm, so which animal could that be, could it be this Argentinosaurus, one of the biggest creatures ever? Or maybe it's an extinct reptile that lived in the ocean like this massive plesiosaur? Actually, it's neither though we do need to consider ocean creatures like

the plesiosaur. The largest heart belongs to an animal that is still alive, the largest creature that has ever lived on earth, the blue whale. For a long time, scientists actually had to guess how big a blue whale's heart was. They hadn't actually seen it's heart. And since blue whales are the biggest creatures, scientists guess, that their hearts must be the biggest too, maybe even as big as a car but they didn't really know for sure. Here's the problem: when they die, they sink to the bottom of the ocean. So scientists could never find a blue whale's heart to study. But then this happened: a dead blue whale happened to wash up on a beach in Canada. Even though I'm sure some of the scientists were sad that the whale died, they rushed to the beach to study its heart. And what they found was amazing. The whale's heart was so big, the biggest heart anyone had ever seen, it weighed 440 pounds and it was huge. A blue whale's heart is big enough that a small child could literally crawl through one like these kids are doing with this life-sized model in this museum. A blue whale's body itself is huge. It's as long as two school buses lined up next to each other. I mean, it's so huge that its tongue alone can weigh as much as an elephant. So it takes the biggest heart in the world to pump all that blood to every part of its body. So in summary, most animals have hearts like we do but they don't always work or look like ours do. Though all hearts pump blood, animal hearts come in different sizes depending on the size of the animal. And since the blue whale is the largest animal that's ever lived, it makes sense that its heart is the biggest too. That's all for this week's question, thanks Husam, for asking it. Now, after this video's done playing, my friends and I here at Mystery Science have created a special activity. It's kind of like an animal heart Safari. You'll meet animals with different-sized hearts and then you'll go on a scavenger hunt searching for objects that are the same size as the hearts you learn about. You can do this activity in a group or all by yourself. I hope you'll try it. Have fun and stay curious!

ACTIVITY INTRODUCTION VIDEO

In today's activity, you'll be going on an animal heart safari. You'll start with a virtual safari, traveling to Africa where you'll meet different animals with different sized hearts. To help you along your journey, you'll have a safari guide. His name is Obi, and he's an expert in the animals of Africa. He'll tell you a little bit about each of the animals you meet. You'll also go on a safari of your very own at home, or in the classroom, where you'll search for objects around you that are similar sizes to the hearts of the animals that you meet. After your heart safari is over, you'll have the option to use what you learned and create an animal heart Valentine's Day card for someone special. We'll show you how to get started, step by step.

ACTIVITY STEP 1

Get your supplies. All you need for the first part of this activity are your eyes and ears! If you decide to make a Valentine’s Day card, we’ll let you know what supplies you need later. When you’re done with this step, click the arrow on the right.

ACTIVITY STEP 2

It’s time to begin your African Animal Heart Safari. First, you meet up with your guide, whose name is Obi. Before you’re even able to set foot into your jeep, you see something out of the corner of your eye. You look over and notice this tiny creature. Obi tells you that this is called an elephant shrew! It’s so tiny—it’s entire body is only as big as your hand. As you observe, you notice another elephant shrew. Obi tells you that one elephant shrew will form a special bond with another elephant shrew and live in the same area together.

ACTIVITY STEP 3

Discuss. If an elephant shrew's body is about the size of your hand, how big do you think it's heart is?

ACTIVITY STEP 4

An elephant shrew's heart is about the size of the tip of your pinky. Some elephant shrews and their hearts may be a little bit bigger or a little bit smaller, but the tip of your pinky is a pretty good guess, or estimate, of their heart size.

ACTIVITY STEP 5

Now it's time for you to get up and go on a little safari of your very own. Instead of looking for animals, your job is to find objects that are about the same size as an elephant shrew's heart—kind of like a scavenger hunt. If you're at home, you can search around different rooms. If you're in a classroom, you may just want to search for things in your desk or look around the room with your eyes. Remember: an elephant shrew's heart is about the size of the tip of your pinky. I'll set a timer for 2 minutes, in case that's helpful.

ACTIVITY STEP 6

Okay, welcome back! What did you find? Here are some things we found: A blueberry, a penny, a raisin, and a single piece of cereal. You might have found something completely different!

ACTIVITY STEP 7

Let's continue on your African animal heart safari. You get into the jeep and Obi starts driving across the African grassland. Before you get very far, you hear a strange noise coming from the bushes. Obi stops the jeep and you look through a pair of binoculars to see this—Hyenas! Obi tells you that hyenas live in groups. And that some hyenas stay with their group for their entire lives, forming close relationships with the other hyenas.

ACTIVITY STEP 8

Discuss. If a hyena is about as big as a person, how big do you think its heart is? Here's a hint: Think about what size your heart is.

ACTIVITY STEP 9

A human heart is about the size of your fist. So a hyena's heart is also about the size of your first. Female hyenas are usually bigger than male hyenas, so their hearts are also a little bigger. But the size of your fist is a good guess, or estimate for the size of a hyena's heart.

ACTIVITY STEP 10

It's time for you to get up and continue on your home safari. Now your job is to find objects that are about the same size as a hyena heart. If you're at home, you can search around different rooms. If you're in a classroom, you may just want to search with your eyes. Remember, a hyena heart is about the size of your fist. I'll set a timer for 2 minutes, in case that's helpful.

ACTIVITY STEP 11

Okay, welcome back! What did you find? Here are some things we found: An orange, a baseball, a coffee mug, and a ball of yarn. If you found something completely different, that's okay!

ACTIVITY STEP 12

Let's continue on your African animal heart safari. Obi mentions that watering holes are great places to find lots of different animals, so you continue on your drive, heading towards a watering hole. As you approach, you hear noises in the distance and the ground starts to rumble. Obi stops the jeep and you look through your binoculars to see this—It's an elephant herd! Obi tells you that the herd is actually one big family—they help and protect one another. He also tells you that elephants develop friendships with other elephants and sometimes stay friends for their entire lives.

ACTIVITY STEP 13

You know how big an elephant shrew heart is, and you know how big a hyena heart is, so now it's time to discuss. How big do you think an elephant's heart is?

ACTIVITY STEP 14

Elephant's are huge! So their hearts are also huge—an elephant's heart is about the size of your entire body. One way to think about it, is if you were to curl up into a ball—that's about the size of an elephant heart. Of course, teenage elephants are smaller and have smaller hearts, and baby elephants are even smaller. But the size of a student curled up in a ball is a pretty

good guess, or estimate, for the size of an adult elephant heart.

ACTIVITY STEP 15

Before you continue your home safari, it might be helpful to get a better idea of how big an elephant heart is. So stand up and then curl yourself into a ball. Now, you're about the size of an elephant heart! You can practice this a few times if you'd like!

ACTIVITY STEP 16

Now it's time for the final part of your home safari. Your job is to find an object that is about the same size as an elephant heart. Now, this one might be a little tricky! If you're in a classroom, you may want to think about something at home that would be the size of an elephant heart. I'll set a timer for 2 minutes, in case that's helpful.

ACTIVITY STEP 17

Okay, welcome back! Here are some things we found: A backpack, a small chair, and a large stuffed animal. What did you find?

ACTIVITY STEP 18

Your African Animal Heart Safari has come to an end. If you've gathered different objects from your home safari, make sure to return them to where you found them. If you'd like to extend this activity and create a Valentine's Day card, click the arrow on the right.

ACTIVITY STEP 19

Get your supplies. We suggest some paper, a pencil, scissors, and something to color with.

ACTIVITY STEP 20

If you have time, here are some ideas for your Valentine's Day card. You can cut and fold a tiny piece of paper to make a tiny elephant shrew sized Valentine. Or, you can cut out a paper heart that's about the size of your heart (or the size of a hyena heart). You can even deliver your card in a new, creative, elephant heart sized way. You can use any of these ideas or come up with ideas of your very own. Have fun and stay curious!