mystery science

Grades K-5
Mini-Lesson: “Can any animal outrun a cheetah?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Jay! When I was in high school, I loved running on my track team. Though I don't run track anymore I still enjoy watching the world's best runners compete. Like Brazilian runner, Alan Oliveira. He's one of the fastest Paralympic runners in the world. He once ran the hundred-meter dash in 10.56 seconds. That's less than a second away from the world record. Watch him running. Notice anything? He doesn't have lower legs so these prosthetic legs help him run. Alan's hard work and super speed helped him win a gold medal at the London Paralympics. Pretty cool. Someone named Mia is curious about running fast. Let's give Mia a call now.

[Video Call]

- Hi, Jay!

- Hi, Mia!

- I have a question for you. Can any animal outrun a cheetah?

- That's a great question.

A lot of you may already know that the cheetah is the fastest land animal on the planet. A cheetah named Sarah was once recorded running 61 miles per hour and she probably wasn't even the fastest. Scientists believe cheetahs in the wild can reach speeds over 70. That's faster

than a lot of cars drive. Whoa! Imagine driving on the freeway and seeing a cheetah run past. That would be pretty amazing. But what is it about cheetahs that make them so fast? Before I go on, I'm curious. What do you think makes a cheetah so fast?

VIDEO 2

I'm not sure what you answered, but you might have said that a cheetah's four legs help it run fast. And you're right. Cheetahs have super strong leg muscles that help them run super fast. And see those claws? A cheetah's claws help it grip on the ground when it's running. Kind of like soccer cleats help a soccer player from slipping when they're running fast. But it's not just how strong a cheetah's legs are that helps it go fast, it's how far those legs can go with each stride or step. Watch this human running. Some Olympic runners go about seven to eight feet with each stride. That means they can run down a football field in about 40 strides. Now, watch this cheetah running. A cheetah has a bendable spine that allows its front and back legs to overlap and acts like a spring. This helps a cheetah spring over 20 feet forward with each stride. That means they could run down an entire football field in only 15 strides. That's a lot less steps than a human. It's almost as if cheetahs are built for speed. Take a look at a cheetah next to a lion and a tiger. Notice the difference in size. A cheetah is lighter than these other wild cats and that helps with speed too. In fact, scientists think that the cheetah is the perfect size for speed. If it were any smaller, like, a house cat, its muscles would be too small to run as fast as it does. And if it were any bigger like a lion or a tiger, it would be too heavy. With all these speedy traits, it's hard to imagine any animal being able to outrun a cheetah. I mean, they're the fastest animals on earth, right? The answer may not be as simple as it seems. For example, some animals can move faster but they don't necessarily run. Like, this white-throated needletail. Some scientists

think that birds like this one might be able to reach flying speeds of 100 miles per hour or more, which is a lot faster than a cheetah. So, they could definitely outfly a cheetah. But what about other land animals like this one? The pronghorn is the second fastest animal on land. It has a lot of the same traits a cheetah does, powerful backlogs, a long stride, it even has cushion toes that help it spring forward at speeds of up to 60 miles per hour, which isn't quite as fast as a cheetah. But even so, a pronghorn might still be able to outrun one. Can you guess how? Okay. Sure, a cheetah is definitely faster than a pronghorn. But here's the thing. Cheetahs are sprinters, which means they can only run super fast for a few seconds before they need to slow down or stop to rest. But pronghorn are long-distance runners. They may be slower than cheetahs at first but they can run fast for a really long time before they need to stop and rest. Now, cheetahs and pronghorns live on different continents so they won't be running into each other anytime soon. But if a pronghorn needed to outrun a cheetah, it probably could if it had a little headstart. And it would probably have a headstart almost every time. Pronghorn have super eyesight and can spot a predator up to three to four miles away. And when they do, their fur sticks up and the glands on their back release a special alarm smell which warns the rest of their herd that danger is near. So, a pronghorn would probably be able to spot a cheetah before it got near, which would probably give them the headstart they need to outrun them most of the time. So, in summary, a cheetah's powerful legs and long stride make it the fastest animal on land. But because it can only run fast in short bursts, the long-distance running pronghorn could probably outrun it if it had a headstart. That's all for this week's question. Thanks, Mia, for asking it!