

## Photo Description

This image shows a dark-colored spider resting on sandy soil. You can see eight long, thin legs spread out from its body, and a dark body in the center. The spider has an interesting shape with legs that point outward like a star.



## Scientific Phenomena

Anchoring Phenomenon: Why does this spider have so many legs?

Spiders are arachnids, and ALL spiders have exactly eight legs. This is a special body feature that helps spiders move quickly, hunt for food, and survive in their environment. Unlike insects (which have six legs), spiders evolved with eight legs because this design helps them balance, climb on different surfaces, and move in many directions. The spider's eight legs work together like a team to help it explore the sandy ground, find food, and escape from danger.

## Core Science Concepts

- Body Structures and Functions: Spiders have eight legs that help them move, climb, and survive. Each leg has special joints that allow spiders to move in different directions and over rough ground.
- Animal Adaptation: Spiders are adapted to their environment. Their long legs help them walk on sand and soil without sinking, and their body color helps them blend in with their surroundings (camouflage).
- Diversity of Living Things: Spiders belong to a group of animals called arachnids. While some animals have two legs (birds), four legs (dogs), or six legs (insects), spiders always have eight legs—this is what makes them special.
- Habitats: Spiders live in many different places, including on the ground, in soil, and among rocks. This spider lives where there is sandy soil, which is a safe place to hunt for insects and other small prey.

### Pedagogical Tip:

For First Graders, emphasize the eight legs as the main identifying feature of spiders. Use a simple chant or song ("Spider, spider, count with me: one, two, three, four, FIVE, SIX, SEVEN, EIGHT!") to help students remember this number. This multisensory approach reinforces the concept while keeping engagement high.

### UDL Suggestions:

Multiple Means of Representation: Provide large, labeled diagrams of spiders with removable leg pieces so students can physically count and attach/detach legs. Multiple Means of Action & Expression: Allow students to show their learning through drawing, acting out spider movements, or using a spider body puppet. Multiple Means of Engagement: Connect spiders to students' curiosity by asking if they've ever seen a spider at home or outside, making the lesson personally relevant.

## Zoom In / Zoom Out

### Zoom In: Spider Legs Up Close

If we could look at a spider's leg through a special magnifying glass (microscope), we would see that each leg is made of many tiny parts called segments that bend and move like the joints in your fingers and knees. Inside each leg are tiny muscles that pull and push to help the spider walk, climb, and hunt. The spider's legs also have special hairs on them that help the spider feel and taste its environment—so the spider's legs are like tiny sensors that tell the spider everything around it!

### Zoom Out: Spiders in the Larger Environment

When we zoom out and look at the bigger picture, we see that spiders are part of a food chain and ecosystem. Spiders hunt and eat insects (like flies, mosquitoes, and ants), which helps control the insect population. At the same time, spiders can become food for larger animals like birds, lizards, and small mammals. The sandy soil habitat where this spider lives is connected to other habitats—rocks, plants, and water sources—all working together to create a healthy community where many living things survive and thrive.

## Discussion Questions

1. How many legs does this spider have, and why do you think it needs so many legs?

(Bloom's: Understand | DOK: 1)

2. How is a spider different from an insect? What do you notice about their legs?

(Bloom's: Compare/Contrast | DOK: 2)

3. If a spider lives on sandy soil like the one in the picture, how do its long legs help it survive there?

(Bloom's: Analyze | DOK: 2)

4. Where have you seen a spider, and what was it doing?

(Bloom's: Remember/Apply | DOK: 1)

## Potential Student Misconceptions

Misconception 1: "Spiders are insects."

Clarification: Spiders are NOT insects, even though they both have legs and live in similar places. The easiest way to tell them apart is to count legs: insects have 6 legs, but spiders have 8 legs. Spiders belong to their own special group called arachnids. Both are important animals, but they are different kinds of creatures.

Misconception 2: "Spiders are bugs, and all bugs are bad."

Clarification: Spiders are helpful animals! They eat many insects that might bother us, like mosquitoes and flies. Spiders do not bite people unless they feel scared or threatened, and they usually try to run away instead. Most spiders are our friends because they help keep nature in balance.

Misconception 3: "Spiders need 8 legs because they're bigger and need more legs to move."

Clarification: Spiders have 8 legs because of how their bodies evolved over millions of years, not because they're big. Eight legs is the right number for spiders to balance, climb on tricky ground (like sand and rocks), and move in many directions at once. It's just how spider bodies are made—different from insects and other animals, but perfect for spiders!

## Extension Activities

1. Spider Leg Counting Game: Provide pictures or models of different animals (bird, dog, insect, spider). Have students sort them by number of legs and count together. Create a simple bar graph showing "Animals with 2 Legs," "Animals with 4 Legs," "Animals with 6 Legs," and "Animals with 8 Legs."
2. Make a Spider Craft: Give students paper plates and pipe cleaners. Have them create a 3D spider by attaching eight pipe cleaners to the plate as legs. Students can decorate their spider and display it in the classroom, talking about why they chose certain colors (blending in with their chosen habitat).
3. Spider Movement Hunt: Take students outside (weather permitting) to observe spiders in their natural habitat. Use hand lenses to safely observe spider movement and where they live. Back in the classroom, have students act out spider movements—climbing, walking sideways, and jumping—to reinforce how the eight legs work together.

## Cross-Curricular Ideas

### Math Connection: Counting and Comparing Legs

Create a "Legs Around Us" sorting activity where students count and compare the number of legs on different animals (spiders, insects, birds, dogs, humans). Use a simple Venn diagram to show which animals have 8 legs versus other numbers. Students can create a bar graph titled "How Many Legs?" and practice counting, comparing numbers, and discussing "more," "fewer," and "same."

### ELA Connection: Spider Story Writing

Read aloud *The Very Busy Spider* by Eric Carle, then have students draw and dictate or write a simple story about "My Spider Friend" or "A Day in the Life of a Spider." Students can use sentence frames like "The spider has \_\_\_\_ legs. The spider lives in \_\_\_\_\_. The spider eats \_\_\_\_\_. This combines vocabulary building, comprehension, and creative expression.

### Art Connection: Spider Habitat Diorama

Have students create a small sandy habitat for a paper or craft spider using a shoebox, real sand, small rocks, and drawn or cut-out plants. Students can paint or color their spiders in different colors and explain why they chose those colors (Does it hide in sand? Does it hide under rocks?). This connects visual art to camouflage and habitat concepts.

### Social Studies Connection: Spiders Around the World

Introduce students to the idea that spiders live on every continent except Antarctica. Show pictures or a simple map of different spider habitats (rainforests, deserts, woodlands, grasslands). Discuss how spiders adapt to different places—some prefer hot sand, others prefer cool, wet forests. This builds geography awareness and the concept that the same type of animal can live in different places around the world.

## STEM Career Connection

### Arachnologist (Spider Scientist)

An arachnologist is a scientist who studies spiders and other arachnids. These scientists observe spiders in nature, learn what they eat and where they live, and discover new spider species. Some arachnologists help people understand that spiders are helpful, not scary! They might work in museums, universities, or nature centers. Average Annual Salary: \$60,000–\$75,000 USD

### Entomologist (Insect and Bug Expert)

An entomologist studies insects and other small animals, including spiders sometimes! These scientists help farmers protect crops, help doctors learn about diseases carried by insects, and teach people about the important jobs insects and spiders do in nature. They might work outside in the field or in a laboratory. Average Annual Salary: \$65,000–\$80,000 USD

### Nature Photographer or Wildlife Educator

Some people take beautiful close-up photographs of spiders and other small animals to teach others about nature. They might work for zoos, nature centers, or create videos and books for kids and families. These professionals help people feel amazed and curious about spiders instead of scared of them! Average Annual Salary: \$40,000–\$70,000 USD (varies widely based on freelance work and experience)

## NGSS Connections

### Performance Expectation:

K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

### Disciplinary Core Ideas:

- K-LS1.A Structure and Function – Spiders have eight legs that are structures helping them move and survive.
- K-LS1.C Organization for Matter and Energy Flow – Spiders hunt for food (insects and small creatures) to survive.

### Crosscutting Concepts:

- Structure and Function – The eight legs are structures that allow the spider to function in its environment.
- Patterns – All spiders have the same pattern of body parts: eight legs, a body, and special adaptations.

## Science Vocabulary

- Spider: An animal with eight legs that hunts for tiny insects to eat.
- Arachnid: A group of animals that all have eight legs, like spiders.
- Legs: Body parts that help animals move and walk.
- Camouflage: When an animal's color or shape helps it hide from other animals.
- Habitat: A place where an animal lives and finds food and shelter.

## External Resources

### Children's Books:

- The Very Busy Spider by Eric Carle (a classic that introduces spiders in a gentle, engaging way)
- Spiders by Gail Gibbons (nonfiction with clear illustrations of spider body parts)
- Jump, Spider, Jump! by Bar-raised (action-based story about spider movement)

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Teacher Tip: This lesson builds foundational knowledge about animal diversity and structure-function relationships. First Graders are naturally curious about insects and spiders, so use that curiosity to develop deeper scientific thinking!