

**LESSON: Prairie Animal Adaptation****GRADE: 2nd****TIME: 45 min.****SUMMARY:**

Students share what they already know about Harvestmen and Spiders. Using a Venn Diagram, the instructor categorizes their answers based on the differences and similarities there are between Harvestmen and Spiders.

Based on their prior knowledge, students work in groups and ask “I wonder” questions about Harvestmen and Spiders. In the field, students search for Spiders and Harvestmen and use pictures and words to collect and record data that will help them find answers to their questions. After the field study, students return to the class’ original Venn Diagram and make necessary corrections and add to it based on their discoveries. Students write concluding statements about how Harvestmen and Spiders are similar and different.

OBJECTIVES: Iowa Core**Science****Biological Evolution: Unity & Diversity**

- **2-LS4-1** Make observations of plants and animals to compare the diversity of life in different habitats.

Mathematics**Measurement & Data**

2.MD.D.IA.2 Use interviews, surveys, and observations to collect data that answer questions about students' interests and/or their environment.



Literacy

Speaking & Listening

- **SL.2.1.** Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
- **SL.2.4.** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
- **SL.2.6.** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Writing

- **W.2.7.** Participate in shared research and writing projects (e.g., record science observations).
- **W.2.8.** Recall information from experiences or gather information from provided sources to answer a question.

MATERIALS & RESOURCES:

- Blank paper or nature journals
- Example of journal entry & background information included in lesson
- Pencils
- White board
- Dry erase marker

PRESENTATION:

Explain to students that today, they will be learning about animal adaptation. Write the word “adaptation” on the white board and have the students read the word. Ask students to explain what an adaptation could be. Write their ideas on the board. Encourage them to provide examples of animal adaptations.

DIRECTIONS:

1. Draw a Venn diagram on the whiteboard and label each circle with “spiders” and “harvestmen”. Gauge students’ background knowledge by asking, “What do you already know about spiders and harvestmen?” If students need



extra guidance ask them specific questions such as: Ask the following questions to compare and contrast spiders and harvestmen:

- How many eyes does it have?
 - How many body segments can you see? What is the shape of its body?
 - Does it have hairs on its body and legs, or is it hairless?
 - Does it have all eight legs?
 - How is it using its legs? Like antennae? To jump or move quickly?
 - Do you notice any smells coming from it?
 - Is it on or near a web?
 - Does it move fast or slow?
2. Copy students answers onto the Venn diagram. Next, instruct students in setting up their journal page. (See example, last page of this lesson). Have students draw a horizontal line to divide their journal page into two sections. Label the sections “spiders” and “harvestmen”.
 3. Divide students into small groups with adult chaperons. Have all the groups form a single file line to get ready to head outside. Remind students that naturalists are happy outside, explorers, adventurers, respectful, and quiet. They ask questions & use words, numbers and pictures to share their discoveries.
 4. Once outside, guide students through the prairie on a search for spiders and harvestman. If none are found due to weather, encourage students to brainstorm why they have not found any and wonder where they may be hiding. Be sure to point out differences between the two species.
 5. After about 15 minutes of searching, have students come together. Tell students that they are going to head back inside. While they are walking to go back inside, ask them to think of something to share about the animal families that they learned outside.
 6. After students have gone outside to investigate and have drawn a picture/description of each arachnid, have them answer a question about the adaptations each has and why they think the spider/harvestman has that adaptation.



7. Lastly, ask students why they think adaptations are important for wildlife? Explain that these qualities help animals stay alive in a world full of predators. Adaptations can also give us clues about the identity of arachnids and other animals.

8. Thank students for coming and remind them that they do not have to be at the prairie to search for arachnids, nature is all around us!

BACKGROUND INFORMATION:

Spiders	Harvestmen
Arachnids - Eight legs	Arachnids - Eight legs
Two distinct body parts – cephalothorax and abdomen	The two body parts are broadly joined into one oval-shaped structure.
Females are much larger than males.	Females have slightly larger bodies but slightly shorter legs than males.
Some bite.	Don't bite.
Most spin webs to catch prey.	No silk glands; cannot spin webs.
All spiders have venom and fangs (not all are harmful to humans). Spiders eat a liquid diet – they inject venom into prey and release digestive enzymes to dissolve it. Most use webs to catch prey, but some (such as wolf spiders) will hunt down prey. There is one omnivorous species in Central America.	Do not have venom or fangs. Feed on small insects and other living things, decaying plant or animal matter, fungus, etc. On either side of their mouth they have short appendages called pedipalps that they use to hold food while they chew it.
Senses of smell and taste, and hearing are in small hairs on legs called setae.	Legs are very long and very thin. Legs do not have hairs. Organs of smell, taste, and hearing are in 2 nd pair of legs. These legs are longer and are used as antennae. Harvestmen usually wave these legs around in front of them.
Four pairs of eyes, in different patterns for different species. One pair should be noticeably bigger than the others.	One pair of eyes, oriented sideways. Species that live mostly underground or in caves have no eyes.
Move legs with hydraulic pressure. A spider with a punctured cephalothorax cannot extend its legs. This is also why a spider's legs curl up when it dies. Jumping spiders can jump up to 50 times their own length by suddenly increasing the blood pressure in the third or fourth pair of legs	Move legs with muscles. Therefore they cannot jump or move as quickly as some spiders.
Legs will grow back if broken off by a predator.	Legs do not grow back if broken off by a predator. Legs will continue to twitch for a minute to an hour after they come off, to distract predators from attacking the body.
Most hibernate in winter (or move indoors!)	Can withstand extreme cold and do not hibernate. They collect in protected places such as woodpiles in the winter.
Usually don't emit any smells.	Produce a foul smelling liquid from two pores slightly in front of the eyes. This is for self-defense.



REFLECTION/JOURNAL PROMPT:

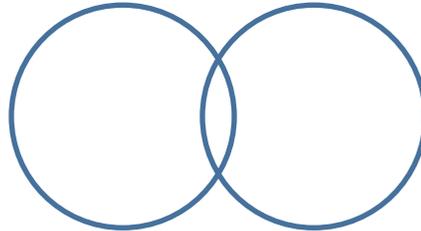
Prairie Animal Adaptations

Whiteboard lesson set-up:

Spiders

Harvestmen

Use a Venn diagram to compare and contrast spiders and harvestmen.



Location
Weather
Temp

Name:
Date:
Time:

Spiders

I think fill in discovered adaptation helps spiders on the prairie fill in reason for adaptation.

Harvestmen

I think fill in discovered adaptation helps harvestmen on the prairie fill in reason for adaptation.