





movements do you see? Focus on context—where is it in relation to cover or other parts of the environment?”

- d. (If you are watching a group of animals) “Can you find one animal that can be clearly distinguished from the others? What characteristics make it unique? Observe the way they group up. How close do they typically space themselves? Does this change? Let’s look for interactions between individuals. Does the behavior of one individual seem to affect others? Let’s think about the group as a whole. How might we describe the behavior of the herd or flock?”

**7. If the animal(s) leave, call the group together to record metadata and to complete field notes from memory, adding in details they haven’t recorded yet.**

- a. “Our observations are not complete without recording the date, time, location, and weather. Add this metadata to your field notes.”
- b. “In time we will forget the details we do not put down on paper. Think for a moment about details or behaviors you observed that are not recorded in your notes. Let’s take five more minutes to fill out the rest of your notes. This could be written descriptions or more details in your drawings.”

## DISCUSSION

Lead a discussion using the general discussion questions and questions from one of the Crosscutting Concept categories. Interperse pair talk with group discussion.

### General Discussion

- a. “Find a partner and discuss the things you saw that were interesting or surprising. Compare your journal entries and approaches to note taking to see what you can learn from each other.”
- b. “Place your journals on this picnic table [or on the ground], open to your last entry. Circulate around and look at the way your classmates recorded their observations. There are many ways to do this kind of work. Find at least three observations that you missed or did not record in your journal. Also look for creative ways that other people recorded their observations. Can you find some journaling ideas that you could use in future observations?”
- c. Ask students to bring up any interesting questions they had, and follow up with discussion of them if students are interested.

### Patterns

- a. “What patterns did you observe?”
- b. “What does that remind you of? Where else have you seen similar patterns? Where would you expect to see similar patterns—for example, in structure, color, or behavior?”

## Cause and Effect

- a. “How did [organism 1] affect [organism 2]? What is your evidence?”
- b. “Did you find any evidence that the [observed animal] may be affected by living or nonliving things in the environment?”
- c. “How do you think the [observed animal] might affect the living or nonliving things in the environment?”
- d. “How might the interactions we observed be affected by the time of day, year, weather, or location? What kinds of things might cause this animal’s behavior to change?”

## ENERGY AND MATTER

*Note:* These questions are appropriate for students fifth grade and above.

- a. “Let’s construct a partial food chain based on our observations. What did you see eating what? Now expand your food chain to a web based on what you have seen in this area, your prior knowledge, and your best guesses about other relationships between animals.”
- b. “Now trace the cycling of matter through the parts of the food chain you just described. Use arrows to show which direction matter is moving among the organisms you observed.”

## Structure and Function

- a. “Study your notes and drawings of the [observed animal]. Do any body parts seem specialized to do specific things or functions?”
- b. “How did you see the animal moving? How did its specific structures help it move? Connect your explanations to the environment, thinking about how the organism’s structures help it survive in this specific context.”

## FOLLOW-UP ACTIVITY

### Using Reference Material

Encourage students to look up more information about the species they observed in the field. Can you find references to behaviors they observed? Can you find details that would be fun to look for the next time the group finds this animal outside? Remind them that all the information in their reference books or online resources originated in the same way: someone making careful observations and recording them in their field notes, just as they had done.