

Numbers in Nature | 2nd Grade

Studying Tracks: Identifying, Measuring, and Observing

Objective: Introduce students to the diversity of animal tracks, how to identify them, and where to best see them; practice measuring lengths as both a non-standard and standard measurement; experiment with pressing tracks into different types of substrate.

Common Core State Standards: Grade 2

2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Lesson Format:

Location: In classroom (30 min), outdoor (30-40 min)

Time: 60 minutes

Materials:

- Animal tracks (14)
- Animal ID cards (14)
- Small animal photos (14)
- Rulers (16)
- Beans (16 cups)
- Laminated animal photos (Deer, Bear, Owl)
- “Animal Tracks of Oregon” poster
- Clipboards (14)
- Worksheets “Whose Tracks Are These?”

Background:

Animal tracks are prints on the ground left behind by an animal’s feet and/or body. Any animal with enough body weight is capable of leaving a track, and usually each species has a unique track, which helps us to identify the tracks. Tracks are clues that an animal was there and can offer a lot of information when studied closely.

Here are some questions that observing tracks may help answer:

1. What species of animal is it?
2. What direction did it go?

3. How recent was the animal there?
4. What was it doing? (signs of eating, hunting, digging, building something, etc.)
5. How many animals were there? (do you see many sets of tracks or only one)
6. Was it young or an adult? (size)

Tracks are best observed in soft or wet ground, like **mud, sand, loose dirt, and snow**.

Tips for Identifying Tracks:

A. What shape is it?

- A. Paw = Mammal
- B. Fork = Bird
- C. Heart = Hoofed animal
- D. H = Woodpecker

B. What's the size? Size is helpful in narrowing down the type of animal and telling the difference between closely related species (wolf vs. coyote, cougar vs. bobcat). Must also factor in age of the animal and sex.

C. How many toe markings are there? Bears have 5 toe markings while felines/canines have 4 toe markings.

D. Do you see claw marks? Canines, rodents, birds of prey, bears, and mustelids have visible claw marks while felines do not (retractable claws).

E. Are you looking at the front or rear foot? The front and rear feet may have a different size and shape.

F. Is there webbing? Webbing is a sign of aquatic animals.

G. Where are you? What animals are associated with that habitat?

A. In Class Component: 30 min

Introduction: Present animal photos of the deer, bear, and owl. Pose the question, think about the difference among the feet of a deer, a bear, and an owl? Are their feet similar or different? Imagine the animal walking through the forest and stepping in mud, what would it look like? Call on 3 students to attempt to draw each animal track on the white board.

Discussion: Tell students that today they will be biologists studying animal tracks! What do biologists do? Biologists study living things in a lot of different ways.

Introduce the diversity of animal tracks by showing the “Animal Tracks of Oregon” poster and compare to what the students drew on the board. Pose questions to the class:

- What is an animal track?
- Where can we best see tracks? Tell students that they will get to experience this outside.
- If an animal walked through the classroom right now, would that animal leave tracks on the carpet or floor? Why or why not?
- What kinds of information can an animal’s tracks tell us? (May need to help guide scenarios).

Instructions: Explain to the class that they will be working with a partner to 1) identify a “mystery” track, then 2) measure it in two ways: using beans (non-standard) then a ruler (standard) in inches rounded to the nearest whole number. Tell students to write the animal name on the worksheet, and **do not draw the track until outside**. If they finish early, they may draw the animal on the back.

Identify: In the classroom, group students into pairs and hand out an animal track to each pair (if there are enough tracks, each student will have a track and work solo). These are all animals found in the Deschutes National Forest! Use guiding questions to help ID the track and display small animal photos (that match the tracks) as the pool to choose from. Students will grab the small animal photo and show the instructor to confirm until they are correct. When correct, give the pair a clipboard with the worksheet, animal ID card, ruler, and beans.

Measure length: After correctly identifying the animal, students may begin measuring. Measure first in beans and then using a ruler. Write measurements on the worksheet. Compare the different units of measurement. Which number was higher? Why? Walk around to help students as needed and make sure they are writing measurements down. **Return animal ID cards, small animal photos, rulers, and beans before heading outside.** Students will take track, worksheet, pencils, and clipboard outside.

NOTE: Every class and student may be at a different skill level using measurement tools. It is a 2nd grade standard to use a ruler, and most students were familiar with it, but it still may be new or challenging to some students. Some struggled, while others finished quickly. Help students as needed and explain how to correctly measure a length.

B. Outside Component: 20 min

Press tracks outside and draw: Head outside to press tracks in areas of snow, mud, loose dirt, or sand. Create a boundary zone and remind students to take turns with the tracks and take time to draw it. Tell students they are able to gently step on the tracks to press them. This is an opportunity for students to test out various substrates for making tracks.

Regroup to discuss:

- What type of ground made the best tracks?
- Were today's conditions good for making tracks? Why or why not?

NOTE: Some schoolyards have poor natural conditions for pressing tracks or the weather conditions were poor. Ask teachers ahead of time for options (baseball field or outskirts), or get creative with making mud or using potting soil. If conditions are poor, do what you can and discuss with the class *why* the conditions were poor and *how* this affected making tracks.