



Neat Feet

Purpose:

- Students will determine seasonal adaptations in the tracks of different mammals and apply math principles in order to do so.

Objectives:

- Students will identify characteristics of animals that allow them to live in certain habitats by observing feet size.
- Students will calculate the weight/unit area of different animal feet.
- Students will discuss what different types of animals live in different habitats by interpreting their data.
- Older students: Students will explain how animals have evolved to adapt to their different habitats by discussing in small groups.

Materials:

- Neat Feet Activity Sheet
- Neat Feet Footprint Sheet
- Graph paper (not provided)
- Calculators (not provided)

Time Required: 1 hour

Appropriate Grade Level: 3-12

NGSS Standards:

3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.

3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all

MS-LS4-6: Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.

HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

Activity:

Introduction	<p><u>Prior Preparation</u></p> <p>Make copies of both supplied sheets for each student and provide graph paper, calculators, and pencils for each student.</p> <p>How do you think we can tell where an animal lives by just looking at it? Examining how an animal is built can tell us a lot about its habitat and behavior. Teeth can tell us what types of food they eat, and their feet can tell us where they live.</p>
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	Animals that live on firm ground don't need a lot of foot area to support their weight. Conversely, those that live on unstable surfaces need much more foot area.
Body	Hand out the two activity sheets and explain the directions. Students will trace footprints from the foot print sheets onto the graph paper. They will then count the number of squares covered by the footprint. (A square that is more than half covered by the footprint is considered covered) Students will enter their data into the table and calculate the results. Once that has been done for all of the footprints the students will answer the questions listed on the sheet
Closure	Have students brainstorm other adaptations that mammals may experience due to their environment or habitat.

Modifications:

- **High School:**
 - Split students into groups to discuss how evolution has played a role in the formation of these features that allow these animals to survive in their habitats.

