Lesson 3 – Math: Quantity, Space, Area, and Fractions

Activity 1- Camas Field Math: Space, Growth & Patterns
Activity 2- Sustainability Math: Camas for Next Year

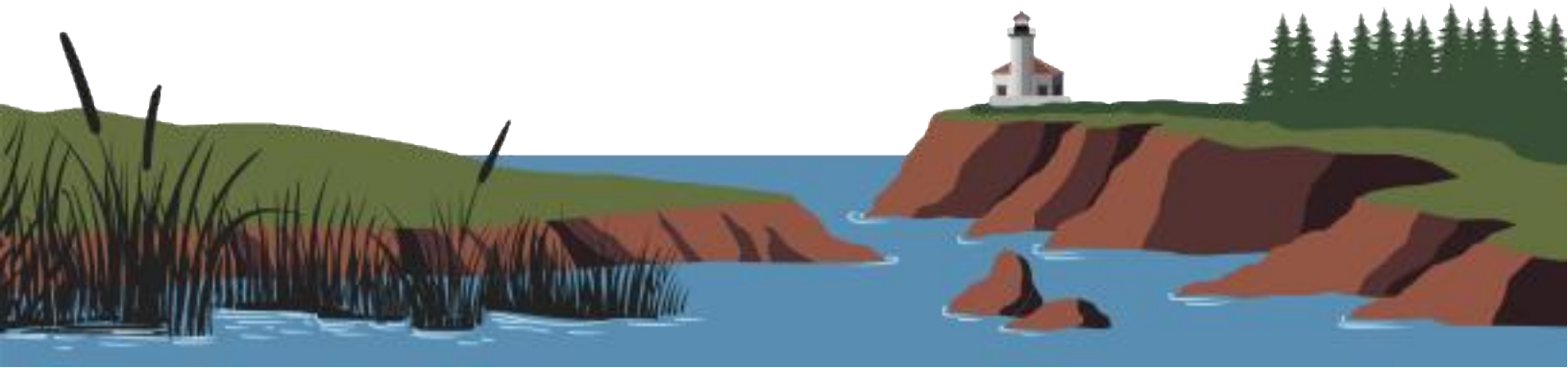
Summary

Mathematics is used to represent how Camas grow within a space and how harvesting decisions shape what remains in future seasons. Concepts of area, multiplication, fractions, and change over time are explored through the lens of stewardship, balancing present needs with the responsibility to sustain future growth.

Key Discovery:

Mathematics can be used to represent how much of something can grow within a space and to model how harvesting decisions affect future growth over time.

Standards	• Primary: 3.GM.B, 3.GM.C.5, 3.GMC.6, 3.OA.3, 3.GM.A.1, 3.GM.A.2, 3.OA.A.1, 3.OA.A.2, 3.OA.B.5, 3.NBT.A.1, 3.NF.A.1
Materials	• Camas Narrative • Camas Field Area Worksheet • Camas Field Story Problem Worksheet • Camas for Next Year Worksheet
Vocabulary	• **Equation:** A math sentence that shows two things are equal, using numbers, symbols, and sometimes letters. For example, 3 + 4 = 7 is an equation. • **Area:** The amount of two-dimensional space enclosed by a flat, closed surface. It measures how many unit squares cover its surface. • **Fraction:** A number that shows part of a whole, written with two numbers separated by a line, like ½ or 3/4. • **Dimensions:** The measurements of an object, usually showing its length, width, and sometimes height. • **Camas**: a perennial lily native to the Pacific Northwest. • **Preparation**: the action or process of making ready or being made ready for use or consideration.



Setup & Logistics:

- Print Camas Field Area Math, Camas Field Story Problems Worksheet, and Camas for Next Year worksheets.
- These activities prioritize reasoning and explanation over speed or accuracy alone.

Class Flow:

Activity 1 – Camas Field Math

Step 1. Introduce Camas and Space

- Camas plants need space to grow.
- Explain that these problems use a model.
- Each square represents one space where a Camas plant could grow.
- Suggested Prompts:
    - How much space do you think one plant needs?
    - What might happen if plants are too close together?

Step 2. Explore Field Layouts

- Distribute the Camas Field Math Worksheet.
- Invite students to work individually, in pairs, or in small groups to complete the Camas Field Math Worksheet.
- Students use the field layouts to figure out how many Camas can grow.

Step 3. Solve and Represent

- Students continue working through problems involving:
    - Area and perimeter
    - Equal groups and partial groups (fractions}
- Encourage students to show their thinking using drawings, numbers, or manipulatives.

Step 4: Share and Discuss

- Bring students together to share strategies.
- Suggested Prompts:
    - How did you figure out how many Camas could grow?
    - What did the shape or size of the field change?
    - What patterns did you notice?
    - What did you learn about Camas today?



Step 5: Camas Field Story Problems

- Distribute the Camas Field Story Problem Worksheet.
- Invite students to work individually, in pairs, in small groups, or as take-home work, to complete the Camas Field Story Problem Worksheet.
- Invite students to compare their answers.

Activity 2- Camas for Next Year

Step 1: Introduce Stewardship as responsible harvesting

- Present a harvesting scenario (e.g., 100 Camas bulbs).
- Suggested prompts:
  - What happens if all the Camas bulbs are harvested?
  - What happens if some are left to grow?

Step 2: Introduce Growth over Time and Reproduction

- Distribute the Camas for Next Year Worksheet to represent how Camas grow across seasons.
- Students use multiplication to show how Camas can grow when bulbs are left to go to seed.
- Invite students to:
  - Use multiplication to model future growth
  - Track how different choices affect outcomes

Step 3: Try, Check, and Revise

- Students work through different harvesting choices:
  - How many to keep
  - How many to harvest
- Encourage students to check their results and try again if needed.
- Suggested Prompts:
  - Do you have enough for next year?
  - What might you change to make sure Camas continue to grow?

Step 4: Share and Discuss:

- Invite students to share their results and reasoning.

Closing Connection:

- Math helps us understand how Camas grow across space and over time.
- It can also help us think about how to take what we need while making sure Camas continues to grow in our future.

