**Math**
**4th Grade**

Lesson 3 Math: | 45 minutes for each

# Activity 1–Getting Ready for a Canoe Journey
# Activity 2–River Math Worksheet
# Activity 3–Basket Design Math Worksheet


## Summary:

Mathematics can be used to represent patterns, relationships, and decisions connected to travel and design. Concepts of distances, time, geometric shapes, and repeating patterns are explored through canoe travel and basket weaving, highlighting how knowledge of waterways, materials, and design continues to support the cultural practices, creativity, and lifeways of the Coos, Lower Umpqua and Siuslaw People today.


***Key Discovery:***
*Careful observation and pattern recognition can help people make decisions, plan, predict, solve problems, and create designs.*

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| **Standards** | • Primary: 4.OA.A 4.OA.C.5, 4.MR<br>• Secondary: 4.GM.B , 4.GM.B.4 , 4.GM.B.5 |
| **Materials** | • Deer-Nosed Canoe Visual<br>• River Math Worksheet<br>• Basket Design Display Sheet<br>• Basket Design Math Worksheet |
| **Vocabulary** | • **Canoe:** narrow, light-water vessel, propelled by a single-bladed paddle or paddles.<br>• **Waterway:** a river, canal, or other route for travel by water.<br>• **Current:** The movement of water in a waterway.<br>• **Distance:** How far something travels.<br>• **Speed:** How fast something moves.<br>• **Time:** How to measure/track how long things take to happen.<br>• **Basket:** A container used to hold or carry things, typically made from interwoven strips of material.<br>• **Pattern:** A design or sequence that repeats in a predictable way.<br>• **Weaver:** A person who creates baskets or other woven items. |



## Setup & Logistics:

- Prepare to display the deer-nosed canoe image
- Queue up https://www.youtube.com/watch?v=N2Q12lNbHZI to share with the students
- Print River Map Worksheets and Geometry of Traditional Baskets Worksheets

## Class Flow:

### Activity - 1 : Getting Ready for a Canoe Journey

**Step 1: Observe and Think**

The Coos, Lower Umpqua and Siuslaw People have traveled local rivers since time immemorial. Canoe travel draws on knowledge of waterways, weather, tides, and other conditions that can change from day to day, and season to season. Canoe traditions continue today and remain an important part of the Tribes' culture.

- Share the canoe video (https://www.youtube.com/watch?v=N2Q12lNbHZI) or display an image of a deer-nosed canoe built by the Coos, Lower Umpqua and Siuslaw People
- Invite students to notice details that stand out to them. Students may choose to think quietly, sketch, write observations, or talk with a partner.
  - Suggested prompts:
  - What did you notice?
  - What catches your attention?
  - What questions come to mind?
  - What details might tell us something about how this canoe travels on the water?

**Step 2: Planning a Journey**

- Invite students to imagine they are preparing for a canoe journey to visit family, gather resources, trade, or attend an important community event.
- Organize the students into small groups.
- Provide each group with the Planning a Canoe Journey Worksheet.
- Invite groups to discuss and record information they think would be helpful before beginning the journey.
- Suggested Prompts:
  - What information might be helpful before traveling on a river?
  - What observations could help someone prepare for a trip?
  - What factors might influence a journey?
  - What knowledge might be gained by observing a river over many seasons and years?





**Step 3: Share and Connect**

- Invite groups to share one or two ideas from their planning discussions.
- As students share, listen for ideas related to distance, time, weather, river conditions, number of paddlers, destination, and knowledge of the waterway.

**Closing Connection:** People often draw on many kinds of knowledge when preparing for a journey. In the next activity, we will investigate how mathematical patterns can help answer some travel-planning questions, such as estimating distance and time.

## Activity - 2: River Math

Many kinds of knowledge can help people prepare for a journey. Today we will investigate one question that travelers might consider: How can patterns help us think about distance and time when planning a trip?

**Step 1: Making Sense of Travel Patterns**

- Distribute the River Math Worksheet.
- Invite students to work individually, with a partner, or in small groups.

**Step 2: Explore and Solve**

As students work, invite them to:

- Identify patterns in the table.
- Use patterns to predict travel and distances and times.
- Show their thinking using words, numbers, drawings, or models.
- Compare different solution strategies with classmates.
- Suggested Prompts”
  - What pattern do you notice?
  - How did you figure out the missing values?
  - What strategy helped you solve the problem?
  - How do you know your answer makes sense?
  - What information from one problem helped you solve another?

**Step 3: Share and Discuss**

Bring students together to discuss their observations.

- Suggested Prompts:
  - What patterns did you notice?
  - Did different groups solve the problems in different ways?
  - How did the pattern help you predict distances or travel times?
  - What changed when the canoe traveled faster?
  - What stayed the same?





**Step 4: Revisiting the Canoe Journey Plan**
After the students complete the River Math Worksheet, invite groups to return to their Planning a Canoe Journey Worksheet.

- Ask groups to review the information they identified as important before beginning their journey.
- Invite students to add new ideas, or revise earlier thinking based on what they learned during the River Math investigation and discussions.
- Students may use a different colored pencil, add a star, or place a checkmark next to ideas that connect to mathematics.
- Suggested Prompts:
  - What did you learn about planning a journey?
  - Which ideas on your planning sheet connect to mathematics?
  - What new information would you add?
  - Which questions might require other kinds of knowledge?

## Activity – 3: Basket Design Math Worksheet

During the River Math investigation, students used patterns to help make predictions about distance and time. Patterns can also be found in traditional basket designs. In the next activity, students will observe, describe, and investigate patterns created by Coos, Lower Umpqua and Siuslaw basket weavers.

**Step 1**: **Observe Basket Designs**

- Display one or more basket images using the Basket Design Display Sheet.
- Invite students to spend time noticing details before beginning the worksheet.
- Students may choose to observe quietly, sketch, write observations, or talk with a partner.

**Step 2: Investigate Patterns and Designs**

- Distribute the Basket Design Math Worksheet.
- Invite students to work individually, with a partner, or in small groups.
- Encourage students to carefully observe each basket before responding.
- Students may show their thinking using words, drawings, numbers, diagrams, or marking of the basket photos.

**Step 3: Share and Discuss**
Bring students together to compare observations and strategies.

- Suggested Prompts:
  - Which basket design stood out to you?
  - What repeating patterns did you notice?
  - Did different people notice different shapes or design elements?





- How did recognizing a pattern help you solve a problem?
- Why might planning be important when creating a basket design?

**Step 4: Closing Connection:**
Invite the students to reflect on both the River Math and Basket Design activities.

- Suggested Prompts:
  - How did patterns help in both activities?
  - What kinds of information can patterns help us notice?
  - How can careful observation support both planning and design?
- Patterns can help people recognize relationships, make predictions, and plan ahead.



