



## MATHEMATICS

# Living With Rivers

### ESSENTIAL UNDERSTANDINGS

- **Since Time Immemorial**
- **Lifeways**

### LEARNING OUTCOMES

Students will understand

- rivers and lakes are essential to the life of Oregon Tribes.
- How to measure and compare lengths of rivers and lakes using rulers and string.
- how to solve addition and subtraction word problems related to water use.

### ESSENTIAL QUESTIONS

- How does river length make a difference for how it is used?

### REQUIRED TIME

- 35 minutes

### Overview

This lesson introduces students to the importance of rivers in the daily life (lifeways) of Oregon's Native Tribes. Students will explore how water was traditionally used for travel, fishing, and survival. Using maps and simple tools, students will measure and compare river distances and solve related word problems.

### Background for Teachers

Since time immemorial, Native American tribes have lived in Oregon and have depended on the land and water to meet their physical, cultural, and spiritual needs. The rivers and lakes of Oregon were—and still are—central to the identity, survival, and culture of Native peoples. Major rivers such as the Columbia River, Willamette River, Rogue River, Deschutes River, and many others have been the lifelines for Native Nations in Oregon, including the Confederated Tribes of Warm Springs, Umatilla, Siletz, Grand Ronde, and Klamath Tribes, among others.



The phrase “Since Time Immemorial” describes Native peoples as having lived on and cared for the land and water far longer than written records exist. Tribes’ deep knowledge of the environment—including how rivers flow, where salmon spawn, and when the waters rise and fall—has been passed down through generations through oral stories, seasonal practices, and spiritual beliefs. This knowledge is not only historical; it continues to inform stewardship and environmental action today. This knowledge is referred to as Traditional Ecological Knowledge (TEK).

Lifeways refers to the unique and complex systems Native people traditionally use to sustain life, including food gathering, housing, transportation, and ceremonial practices. Rivers and lakes were vital in all these areas. For example:

*Food Gathering:* Rivers provided salmon, lamprey, sturgeon, and other fish that were key sources of protein. Fishing techniques were highly skilled and included the use of fish weirs, dip nets, spears, and platforms built over rapids.

*Transportation:* Many Native communities traveled and traded using dugout canoes made from cedar trees. Rivers were highways, connecting tribes across large regions.

*Trade and Economy:* Waterways connected people, making it easier to trade foods, baskets, tools, shells, and other items. The Columbia River was a major trade route and cultural hub.

## STANDARDS

### Oregon Mathematics Education Standard

- **2.MD.1** - Measure and estimate lengths in standard units.
- **2.MD.4** - Compare lengths of two objects.
- **2.OA.1** - Solve word problems using addition and subtraction

## KEY WORDS and IDEAS

- **Compare** – To examine in order to discover similarities and differences between two or more things
- **Essential** – Very important or necessary
- **Measure** – To find out how long or far something is
- **Length** – How long something is from start to end.



*Spiritual and Cultural Significance:* Many tribes view water as sacred. Rivers are honored in songs, ceremonies, and traditional stories. First Salmon Ceremonies and Water Blessings continue today as acts of gratitude and environmental stewardship.

By measuring and analyzing river lengths using math, students are not just learning numbers—they are gaining insight into how geography shaped and supported entire civilizations and how those civilizations, in turn, cared for their environment. Understanding how Native peoples used rivers as part of their lifeways helps students appreciate the deep relationship between people and place, as well as how that relationship continues in modern Native communities as they work to protect and restore rivers today.

## MATERIALS

### What materials are needed for students to engage in this activity?

- River Lengths and word problem worksheets at the end of this lesson
- Rulers
- 7-inch-long pieces of string
- Printable Oregon maps with rivers marked at the end of this lesson
- Student self-assessment

## Considerations for Teachers

### Practices

While teaching this lesson, the following principles can help guide your decision-making and engagement with students.

- Focus on teaching the Essential Understanding lifeways through exploration of Tribes use of rivers in Oregon.
- When sharing content with students, address the why, not just the what.
- Highlight the strengths and struggles of Oregon's Indigenous peoples today while also acknowledging their history and tradition.
- Ensure your teaching practices are accessible and appropriate for Native and non-Native students.



## Assessment

During this lesson, observe and listen to students during discussions and as they work independently and collaboratively to determine how their learning is progressing. Write down what you notice about what students say and do in relation to the success criteria. Use this formative information to provide feedback to students and plan next steps.

At the end of the lesson, provide students with an opportunity to reflect on their learning through a self-assessment. Students can indicate their level of learning in relation to specific success criteria. They can also write out an explanation of why they feel they are at that learning stage.

## Success Criteria

- I can explain why rivers and lakes are important to Oregon Tribes' lifeways.
- I can measure and compare the lengths of rivers and lakes using rulers and string.
- I can solve addition and subtraction word problems related to water use.

## Lesson Activities

### Opening

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**Time: 10 minutes**

#### Step 1:

Introduce students to the nine federally recognized Tribes in Oregon (See the handout at the end of lesson.). Explain that Tribes each have their own land, language, and culture. Each Tribe is like a really big group of relatives, with lots of different big families. These families are called bands, and the bands come together to make a Tribe.

#### Step 2:

Show a map of Oregon highlighting rivers and lakes like the Columbia, Willamette, Rogue, and Crater Lake (see handout at the end of lesson).



Share the following fun facts about Oregon rivers with students.

- The Columbia River was like a superhighway for Native tribes! People used dugout canoes to travel, trade, and visit family across great distances.
- The Columbia River is famous for salmon runs. Native tribes hold First Salmon Ceremonies to thank the river and the fish, and to ensure the salmon will return each year.
- The Deschutes River was an important fishing place for tribes like the Warm Springs and Wasco.
- The tribes knew every twist and turn of the Deschutes River. They used it like a natural map, guiding them to campsites, fishing spots, and trade routes.

Ask students about their experiences with rivers.

### Step 3:

Share this video showing how Oregon Tribes used rivers for fishing, travel, or ceremonies. [Stories from the River: Lifeways](#) (The video is 6:08 minutes. Show students the clip from 1:43 – 2:35 minutes)

Ask students: “Why do you think rivers were so important to Oregon Tribes’ way of life?”

Explain that Native people used and continue to use these waters for many purposes such as fishing, transportation, trading, and ceremonies.

## Main Activity

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**Time: 20 minutes**

### Step 1:

- Give students a ruler, some string and the map handout.
- Have students use a string to trace the rivers on the map and record measurements in the worksheet handout.
- Ask students to compare which rivers are longer or shorter:
  - Which river is the longest?
  - How much longer is the Columbia River than the Deschutes River?



## Step 2:

Pose real-life math scenarios. Ask students to work in pairs to solve the following word problems.

- "If a canoe traveled 16 miles down a river on one day and 12 miles the next, how far did it travel in all?"
- "One tribe caught 24 fish at one river and 18 at another. How many fish did they catch in total?"

Ask students to draw a picture and/or write one sentence about what they learned about Oregon rivers and how Native Tribes use them.

## Closing:

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**Time: 5 minutes**

### Step 1:

Ask students, "How do rivers help people live and travel?"

- "How would the length of a river make a difference to what people do on a river?"
- "Why is it important to take care of rivers today, just like Native people have always done?"

### Step 2:

Have students do the self-assessment based on the Success Criteria. Go over the Success Criteria as needed.

## Additional Resources

2<sup>nd</sup> grade lessons by The Klamath Tribes, [C'waam and Koptu Lessons](#)

4<sup>th</sup> grade lesson by [The Confederated Tribes of Siletz Indians](#), [Mapping Our Lands](#)

Oregon Maps: [Pg 42 of the Student Atlas of Oregon: A Classroom Atlas for Elementary and Middle Schools Elementary and Middle Schools](#)

[Confederated Tribes of Warm Springs](#) - Information about the Warm Springs tribe, their relationship with water, and cultural traditions.

[Columbia River Inter-Tribal Fish Commission](#) (CRITFC) – Details about Native American fishing rights and environmental conservation.

[Native Land Digital](#) – Interactive maps showing the traditional lands of Indigenous peoples.



## Handout: The Nine Federally Recognized Tribes in Oregon

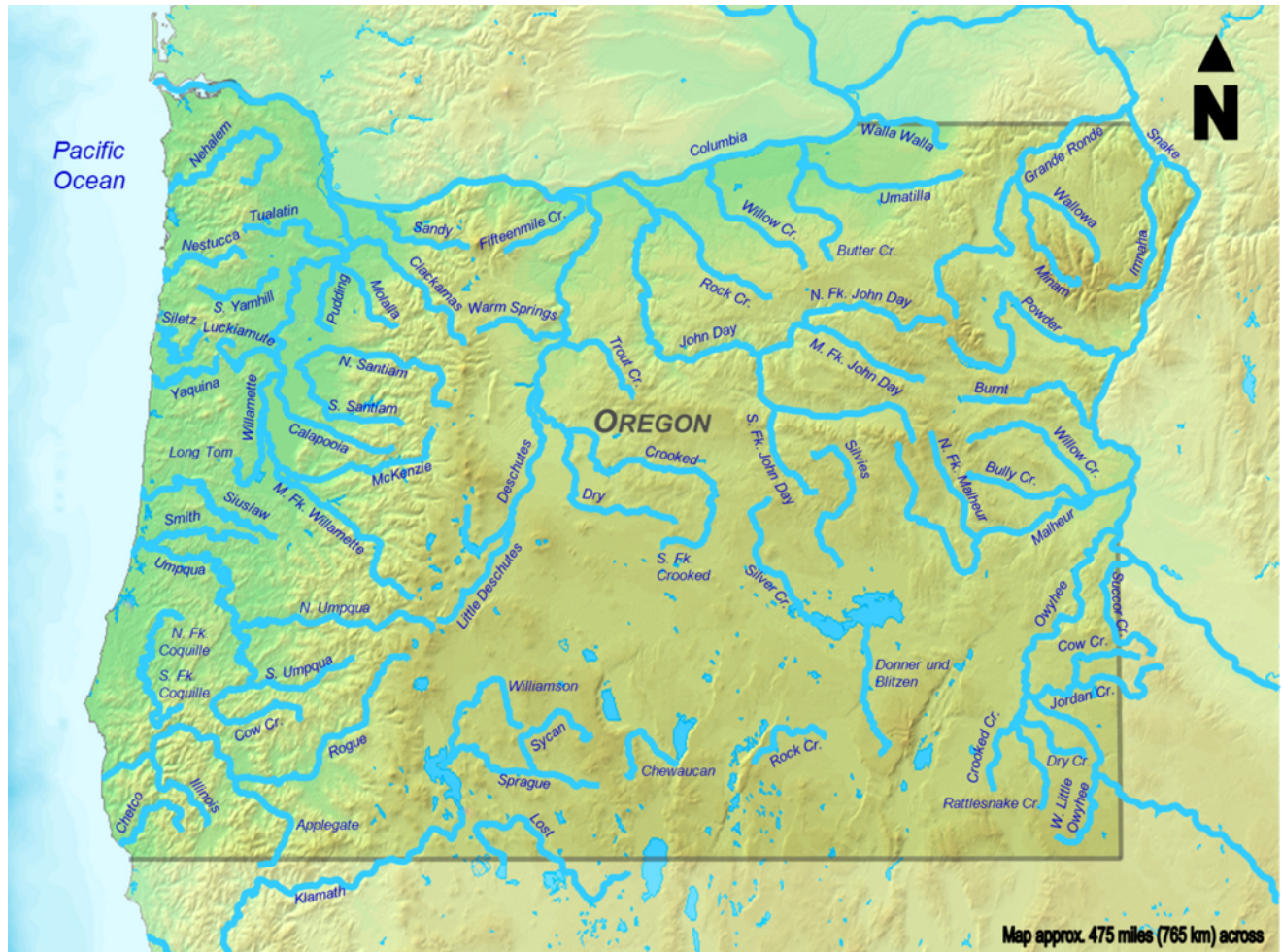


### Which Tribe is closest to you?

There are nine tribes in Oregon today, much less than in the long past. The Tribes are not the same! Each has its own land, language, and culture. Each Tribe is like a really big group of relatives, with lots of different big families. These families are called bands, and the bands come together to make the Tribe. One Tribe, the Confederated Tribes of Grand Ronde, has 27 bands!



## Handout: Map of Oregon Rivers



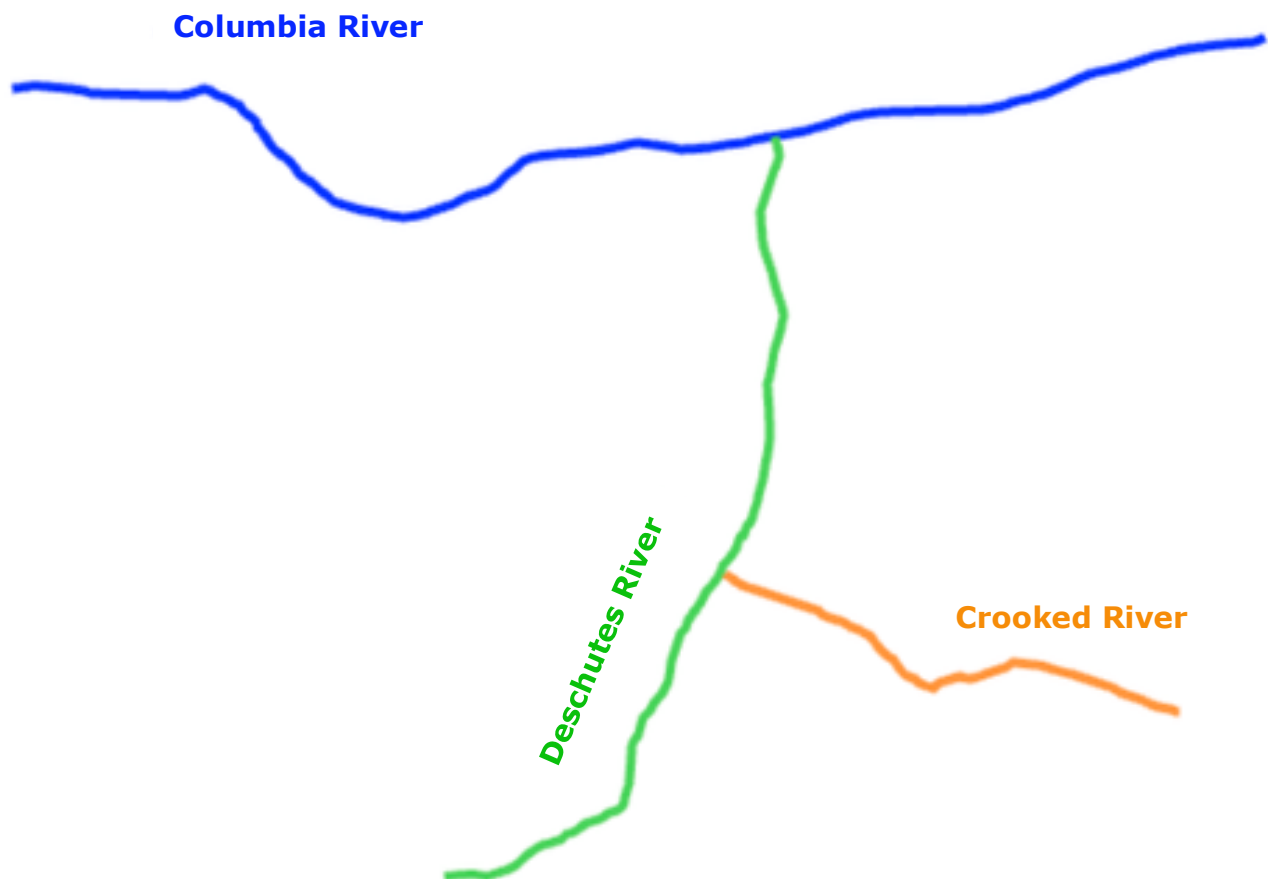
Map credit: Demis Map Server, Little Mountain 5, CC BY-SA 3.0 < <https://creativecommons.org/licenses/by-sa/3.0> >, via Wikimedia Commons



## Handout: River Measurement Worksheet – page 1

Name: \_\_\_\_\_. Date: \_\_\_\_\_

**Directions:** Use your ruler and a string to measure the rivers' paths shown below. Answer the questions for each river on the next page.



Oregon Rivers: Columbia, Crooked, and Deschutes River



## Handout: River Measurement Worksheet – page 2

### Measurements

Measure the length of the Columbia River: \_\_\_\_\_ inches

Measure the length of the Deschutes River: \_\_\_\_\_ inches

Measure the length of the Crooked River: \_\_\_\_\_ inches

### River Comparison

Complete the table below:

Size	River Name	River Length
Large		
Medium		
Small		

### Solve world problems



1. "If a canoe traveled 16 miles down a river on one day and 12 miles the next, how far did it travel at all?" \_\_\_\_\_ miles + \_\_\_\_\_ miles = \_\_\_\_\_ miles
2. "One tribe caught 24 fish at one river and 18 at another. How many fish did they catch in total?" \_\_\_\_\_ fish + \_\_\_\_\_ fish = \_\_\_\_\_ fish



## Student Self-Assessment

Name: \_\_\_\_\_

**Directions:** Read the lesson Success Criteria below. Then choose Not Yet or Yes to show if you met them. Write down what you did well and what is a next step you can take.

Success Criteria	Not Yet	Yes
		
I can explain why rivers and lakes are important to Oregon tribes' lifeways.		
I can measure and compare the lengths of rivers and lakes using rulers and string.		
I can solve addition and subtraction word problems related to water use		



What did I do well, and what is a next step I can take?

