

Forest Rangers

The Movie:

Forest rangers describe some of the techniques used to keep hundreds of thousands of acres of trees healthy. Featured: Arnold Wilson, forester, U.S. Forest Service; Brad Washa, fuel specialist, U.S. Forest Service. *(Movie length: 1:44)*



Background:

America's forests represent not just one natural resource, but many. They support wildlife which is an important part of humankind's ecosystem, they nurture and protect rivers, streams, lakes, and ponds, and they offer a recreational refuge for millions of Americans every year.

Of the original 1.04 billion acres of forest which once carpeted much of the U.S., only about 40 million acres—4%—remains. Much of this forest lies on public lands, and its management in the public interest is the responsibility of the U.S. Forest Service.

Curriculum Connections:



Ratios

1

A forest ranger wants to plant three kinds of trees on a mountain: Ponderosa Pine, Douglas Fir, and White Fir. He has decided that he wants these ratios for the trees:

Ponderosa Pine: Douglas Fir = 2:1

White Pine: Ponderosa Pine = 3:2

Suppose he has 20 Ponderosa Pine trees to plant.

- How many Douglas Fir trees should he plant?
- How many White Fir trees should he plant?
- How many trees total would he plant?

Suppose he decides he wants to plant a total of 120 trees.

- How many Ponderosa Pine trees should he plant?
- How many Douglas Fir trees should he plant?
- How many White Fir trees should he plant?

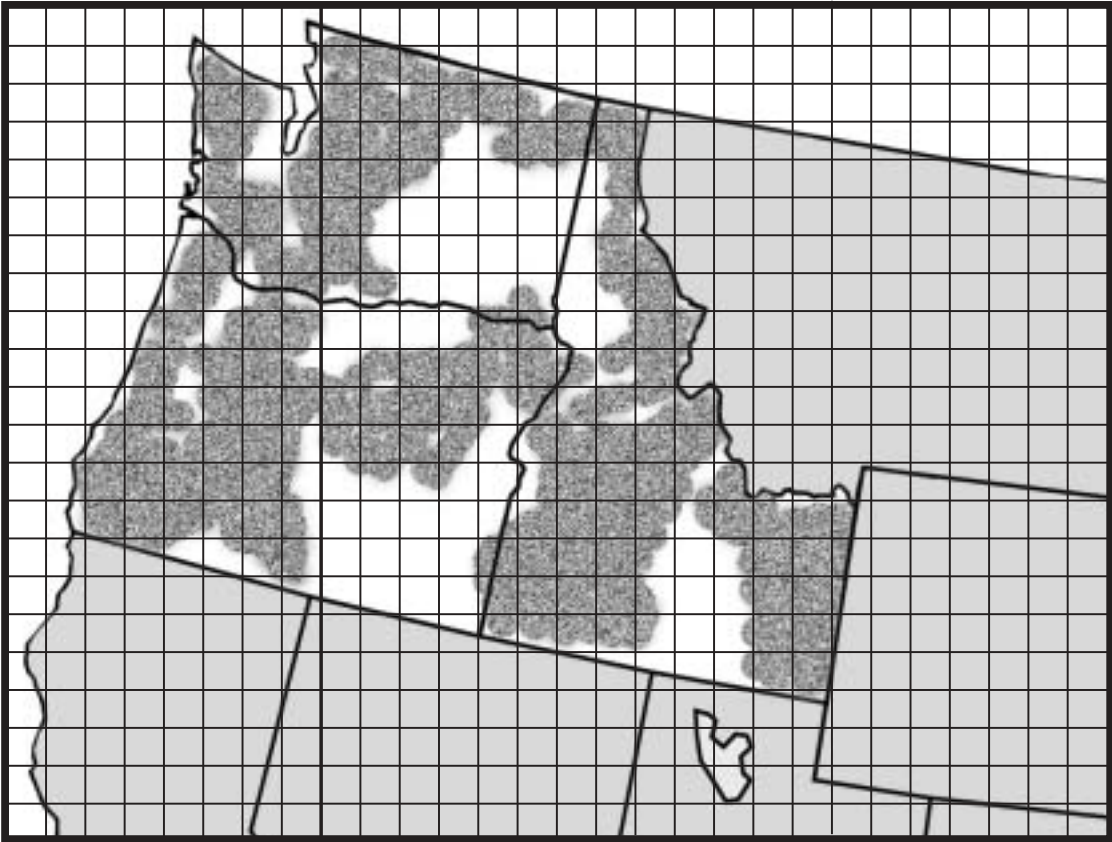
The Pacific Northwest


Three states are shown on the map below: Washington, Oregon, and Idaho.

The parts of the states that are covered with forests are shaded in. The unforested land is not shaded.

For each state, find the ratio of the amount of forested land to unforested land.

Which state has the most forested land compared to its unforested land?



 = trees

Teaching Guidelines: The Pacific Northwest Math Topic: Ratios

This activity is best done by students working in teams of two.

Hand out the activity sheets, and have students read them up to the first instruction (“For each state, find...”).

Discuss this assignment with the class and ensure that all students understand what is being asked.

Have students carry out the first instruction. Circulate as students do the activity, helping as needed.

Once all students have found these ratios, have a student read the next question (“Which state has the most forested land compared to its unforested land?”). Ask students if this is the same question as

asking “Which state has the most forested land?”, and discuss this until students clearly understand the difference between those two questions.

Write the three ratios on the board, and ask students how they could compare those ratios. Tell them that you will give them one hint, that ratios can also be written as fractions, and write the ratios in that form. Then have students talk the problem over with their teammates and try to find a way to compare the ratios.

A simple approach is to notice that two of the ratios are less than one half (because in fraction form the numerators are less than half of the denominators). Another is to convert each fraction to a decimal and compare the decimals.



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<i>Creating a Campground, #4009</i>	Creating campsites in the New Mexico wilderness calls for a knowledge of ratios and proportions.

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