

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

# Wisdom of the Tree Rings (Dendrochronology)

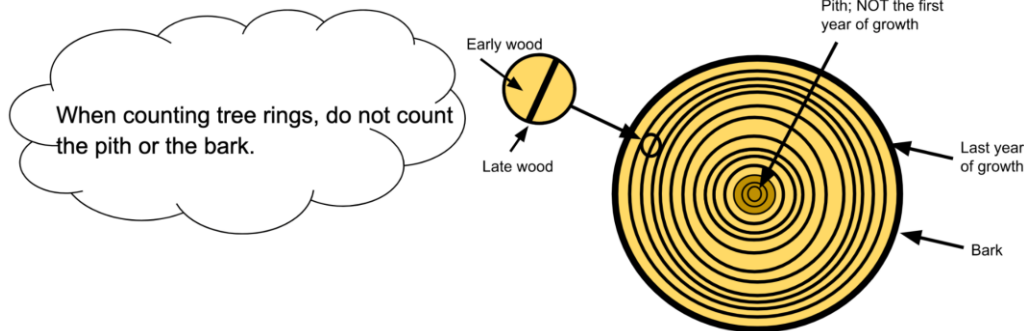
In this activity, you will study the tree rings of the Grand Canyon region like a dendrochronologist (tree ring scientist). By analyzing the rings in tree cookies and cores, you can discover the age of trees and learn about environmental conditions over many years. Trees are sacred beings in Navajo and Hopi cultures that provide valuable teachings if we observe them carefully.

## Do Now:

1. How old are you?

Take a look at the cookie on the right and respond to the questions below.

2. Count the number of rings. How many rings do you see?
3. What do you think each ring represents?
4. Highlight/Circle the tree rings that correspond to your age.



Now, we are going to get into groups.

You should have the following materials:

- Tree cookie
- Hand lens
- Ruler

## Part 1 - Tree Cookie Analysis:

1. Examine your group's tree cookie closely with a hand lens. Find the innermost ring, which is the pith, which is the spongy part of the tree. The first ring, which is the oldest ring, is this next ring, which represents the tree's first year of growth.
2. Now locate the outer ring at the inner bark edge, which shows the tree's most recent growth.
3. Count the number of rings from the first ring to the bark edge. This equals the tree's age in years when it was cut down.

Record the age:

4. Look closely at the ring spacing and thickness. Do you notice any patterns or changes over time?

5. If rings are wider or more narrow during certain years, what might that tell you about growing conditions like water/rainfall?

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## Part 2 - Tree Core Analysis:

1. Now analyze the mounted tree core sample from a living tree in the region using your hand lens.

2. Measure the **length** of the core sample in **centimeters**: →

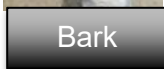
3. Estimate the age of this tree based on the **number of rings** in the core:

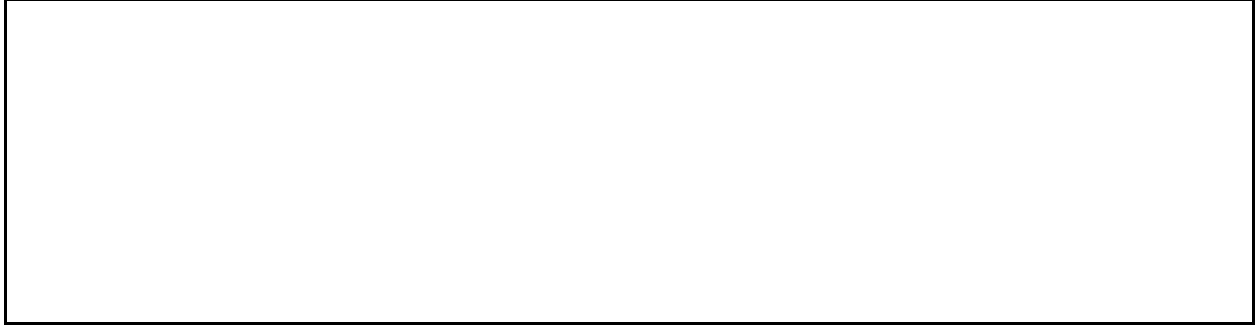
\_\_\_\_\_ rings

## Discussion

4. Compare the core's ring spacing and patterns to those in the tree cookie. Do you notice similar years of wider/narrower rings?

5. What potential events or environmental changes could the ring patterns be recording over the years?





## Understanding from Nature – Traditional Knowledge:

In Navajo and Hopi cultures, trees are viewed as sacred beings to be respected. Traditional ecological knowledge values learning from observing nature closely over many years.

6. You may draw and/or respond in words to the following question: How might studying tree rings and their patterns connect to these cultural values of **patience** and **respect** for nature's teachings?

