Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per \_\_\_\_\_

Activity 2: Tree Cookies & Circumference!

TREE COOKIES & CIRCUMFERENCE!

**Question: Can you determine how old a tree is just by the tree’s circumference? If so, what kind of a relationship do you expect to find?**

**Hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Go through this activity to discover the answer to the question above! Along the way, you will also discover radius and diameter as well! Vocabulary words have an \* in front of them ☺.

\***Circumference** is the distance around the edge of a circle.

1. Find out how old each tree is by counting the tree rings. Record your data in the table provided.
2. Take your tape measure and measure the circumference of each tree ring for your specific series of tree cookies (either Birch or Spruce). Measure to the nearest tenth of a centimeter. Record your data in the table provided.

\***Diameter** is the distance across the center of the circle (or tree cookie!) from one side to the other.

1. Measure the diameter of each tree cookie to the nearest tenth of a centimeter. Record your data in the table provided.

\***Radius** is half the distance across the circle OR half the diameter.

1. Calculate the radius for each tree cookie. Show your evidence and record your data in the table provided.

Another way to get circumference is to calculate it using a formula. The formula for the circumference of a circle is $C=2πr$ OR $C= πd$ where *r* is radius and *d* is diameter. You should know that $π≈3.14$. For example, if we measured the diameter as 11.5 cm and use the second equation, $C= πd$, we get $C=\left(3.14\right)\left(11.5\right)=36.11 cm$.

1. Calculate the circumference for each tree cookie. Show your evidence and then record in the table provided. Then answer the following questions in full sentences.
	1. Did your calculated circumferences come out to be the exact same as OR close to your measured circumferences? Explain.
	2. Are any of your measurements/calculations way off? What do you think happened?
	3. Why do you think your teacher would want you to measure AND calculate the circumference when it would have been much easier to just measure the circumference of the tree cookies and be done with it?
2. Graph tree age vs. measured circumference on a graph. Get graph paper from your teacher. Remember to include a title, even intervals along the x and y-axis, and labels. Graph accurately and neatly.
3. Use your graph to explain your results.

ENRICHMENT: Is counting rings an accurate way of counting tree rings? Read the literature at the following website <http://ltrr.arizona.edu/> . If you do not have access to a computer, go to the activity table in the back and look at some of the online handouts.