

GROW YOUR PALS PROGRAM GUIDE



THE NATIONAL FFA MENTORING PROGRAM

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LESSON 49

Let's Talk Tree Growth

Unit:
PLANT SCIENCE

PRECEPTS

- F. Continuous Improvement
- F5. Acquire new knowledge

NATIONAL STANDARDS

NS.K-4.3 Life Science



Lesson Type:
Small Group

STUDENT LEARNING OBJECTIVES

As a result of this lesson, the student will ...

1. Estimate a tree's height.
2. Measure a tree's circumference.





TIME

Instruction time for this lesson: **35 minutes**.



RESOURCES

None



TOOLS, EQUIPMENT AND SUPPLIES

- ✓ pencil – 1 per student
- ✓ calculator (optional)
- ✓ note cards – 1 per student and 1 per PALS pair
- ✓ flexible tape measure – 1 per PALS pair



KEY TERMS

The following term is presented in this lesson and appears in ***bold italics***:
circumference

INTEREST APPROACH

This interest approach will sparks the student's interest about making estimations. Start out small, such as estimating the height of a person, to the top of the door, to the ceiling and then finally to a tree. Pass out a note card to each set of partners so that they can capture their estimations.



We are going to play a game called “Estimation Einstein.” Who can tell me who Albert Einstein was? *A great physicist and incredibly intelligent man.* That’s right! This game requires us to be Albert Einstein in estimating the height of certain objects. In order to play this game, each person will need a partner, and one note card per partner group. When I say GO, take 30 seconds and find those two objects. Questions?

GO.



Our first item to estimate is me! How many inches tall do you think I am? Make sure you write your final guess down in the next 10 seconds. When you are ready for the next item, hold up your card. How tall, in inches, do you think the doorframe is? How about the ceiling?

Build up anticipation for the hardest estimation of them all. Get them ready to go and estimate a tree's height.



OK, OK. Those were easy estimations. Now for the hardest one of all! How tall do you think a tree in front of our school is? Does everyone have your estimations recorded? Great, now what estimation was hardest for you to determine?

Allow for responses.



What made some of these estimations hard to determine?

Allow for responses.



How accurate do you think your estimations are?

Allow for responses.



What information/knowledge did you use to help you make your estimations?

SUMMARY OF CONTENT AND TEACHING STRATEGIES

OBJECTIVE 1. | Estimate a tree's height.



Take the PALS outdoors to the previously mentioned trees to estimate their height. Have PALS work in the same group as in the first activity. PALS will probably need to work at a few different trees, so that a single tree isn't too crowded. Go through the steps in a step-by-step process with them to ensure understanding.



In order for our estimations to be most accurate, we need to go look at a tree. When I say TREE, we will need to gather our note cards and pencils, find our PALS partner, exit the classroom quietly and go outside to a tree. Questions?

TREE.

Determine the roles between your PALS.



Select one partner to stand by your tree. And the other needs to take the pencil and take 20 paces away from the tree.

Describe how to measure the height of the person and then compare it to the tree's height.



Hold your pencil out at arm's length. Cover part of the pencil until the visible part is the same length (height) as your partner appears to be. Next, move the pencil up the tree to see how many times taller the tree is than your partner. Write down the number of times the uncovered part of the pencil "fits" before the treetop.

Next help your PALS calculate the estimated tree height.



With this information, we can make a more accurate estimation. Take the height of the partner standing by the tree and multiply it by the number of times your pencil "fit" the tree.



If time permits, be sure that the partners take turns so that both have a chance to estimate and stand next to a tree to be measured.

OBJECTIVE 2. | Estimate a tree's *circumference*.



Conduct a Me-You-Us Moment in defining **circumference**.



Think to yourself about the word **circumference**. Define **circumference** in your head without talking. When you have a definition in your head give us a thumbs-up. Now turn to someone standing next to you and tell that person your definition. What were some of your ideas?

*After letting partners share ideas, tell them the definition that they will be using in class. **Circumference** is the size of something that is circular or cylindrical in shape, as given by the distance around it.*

*After revealing the definition, have them make a final estimation on their note card about the **circumference** of the same tree they estimated the height on.*



Now we are going to make a final estimation. What do you think the **circumference** of your tree is? Write your estimation on your note card. Once you have your estimation on your card, you may come to me to receive your flexible tape measure.



*Help students to measure their tree's **circumference**. Once everyone is finished measuring the **circumference** of the tree, talk with your PALS about the importance of knowing tree size. Talk about how foresters, landscapers and researchers use this information.*



REVIEW / SUMMARY / EVALUATION

Use the Hieroglyphic Moment to have students create an icon or picture that represents the word **circumference**. Have them draw their icon on a new note card as their ticket-out-the-door.



APPLICATION

One-on-One Suggestion: Collect numerous heights and **circumferences** from several of the trees on campus.



Large Group Suggestion: Explore the concepts of **circumference** even more. Explain the formula for **circumference** and figure **circumference** of logs, when the diameter or radius is known.