Open-Sky School

Category
MATHEMATICS

Activity

Determining the Age of a Tree

MATERIALS
- Clipboard
- Calculation sheet
- Tape measure over 1.40m
- Calculator
- Photocopies of *Determining the Age of a Tree* worksheets *(p. 3-5)*

DURATION:
30 MINUTES

Activity Summary

This activity involves calculating the age of a tree by measuring its circumference and using a mathematical formula. It aims to consolidate the measurement of length, the properties of a circle, multiplication, and division with decimal numbers.

Preparation

- Consult the following link to learn more about the different methods we can use to determine the age of a tree: https://www.wikihow.com/Determine-the-Age-of-a-Tree
- Identify the tree species your students will measure to determine the multiplication factor: https://earthrangers.com/public/content/wildwire/TREEGUIDE-_EN.pdf
- You can also consult the science activity *The trees around us.*

Steps

A. Estimate the age of the tree

Say
Do you know how we can determine the age of a tree?
Listen to students' suggestions.

Say:
Today we will determine the age of a tree (or trees) using a method that does not harm the tree, from its circumference.

Say, or have a student read the following instructions aloud:

First you will need to find the circumference of a tree at a height of 1.4 m.
Model the measurement of a height of 1.4 m.

- Ask students to describe the parts of a circle and identify the circumference.
- Divide this number by Pi to obtain its diameter. Finally, multiply this number by the multiplication factor corresponding to your tree type, and you will have an approximate age of the tree.
- Record your answer to the nearest thousandth.

Distribute materials

___ ÷ 3,1416 = _____

_____ x _ Multiplication factor _ = _____

- 1.5 – for silver maple, elm, poplar;
- 2 – for birch, white pine, red pine, Austrian pine, red maple, oak and larch;
- 2.5 – for balsam fir, beech and ash;
- 3 – for very slow-growing trees such as red oak and walnut.

RETURN TO GROUP

Bring students together to compare the tree identifications and results for each team.

REINVESTMENT:
Conduct a tree census to identify the average age of trees in the park.

Adapted from:
© Wauquiez, S., Barras, N., & Henzi, M. (2020). *L'école à ciel ouvert: 200 activités de plein air pour enseigner* (pp. 72-75). Silviva: France.

To learn more: http://salamandre.org/

Determining the age of a tree

Procedure:

To determine the age of a tree, measure its circumference at a height of about 1.40 m from the ground. Next, determine the trunk's diameter by dividing the circumference by Pi (3.1416). Finally, determine the species of the tree to multiply its diameter by the appropriate multiplying factor. This will give you the tree's approximate age.

- 1.5 – for silver maple, elm, poplar;
- 2 – for birch, white pine, red pine, Austrian pine, ash, red maple, oak and larch;
- 2.5 – for balsam fir, beech and ash;
- 3 – for very slow-growing trees such as red oak and walnut.

Determine the approximate age of the following trees:

1) Tree species: _____

Circumference: _____

Calculations:

Diameter: _____ Age: _____

2) Tree species: _____

Circumference : _____

Calculations:

Diameter: _____ Age: _____

3) Tree species: _____

Circumference: _____

Calculations:

Diameter: _____ Age: _____

4) Tree species: _____

Circumference: _____

Calculations:

Diameter: _____ Age: _____