



Your Ultimate Guide to **Math in Nature**

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Welcome!

Let's have FUN in NATURE!



Welcome to the Ultimate Guide to Nature, where learning can be brought outside!

Learn how to incorporate numbers, addition, subtraction, multiplication, division, fractions, the number line, measurement and more all through playing outside with nature objects!

Have fun with leaves, sticks, rocks, trees and imagine the endless possibilities! Younger students can create their own patterns and older students can turn patterns into linear equations.

Plus, allow students to be creative with your own ideas to make the day in nature even more memorable!

MATH CONCEPTS IN NATURE

Counting, Skip Counting, Numbers, Number Line, Measurement, Time, Patterns, Addition, Subtraction, Multiplication, Division, Fractions and more!

Nature Math = Fun



Melo Math

Math in Nature Activities

1) COUNTING AND SKIP COUNTING

- a) Find nature objects to count forwards and backwards. Teach students how to cross over the tens.
- b) Organize the nature objects in groups of 2,3,4,5,6,7,8,9 or 10. Encourage counting and whisper skip counting the items to develop pre-multiplication skills.
- c) Attach the symbolic form to the items. Draw numbers in the dirt, or create the numbers with the nature objects.
- d) Explain how the zero is hiding in the ten!

2) MEASUREMENT

- a) Bring measuring tapes outside and have students measure nature objects to promote number sense, ordering and comparing objects. Students can bring recording sheets and clipboards outside to practice estimating and measuring. Younger students can measure items and round up or down their nearest measurement to the closest centimetre. Older students can measure in millimetres, centimetres, and metres and record using decimal numbers.
- b) To extend the activity, students can add or subtract their recordings or create graphs of their items.

3) NUMBER LINE

- a) Bring chalk outside and allow students to create a hopscotch number line as long as they can! Talk about the numbers and ask students to draw the number in each box.
- b) Talk a long piece of string outside and place value cards. Ask students to line up the numbers in order along the string. Have fun asking different questions to guide students to think critically. Ask students to gather nature objects and represent the quantity along the number line with the symbolic numbers. The number line could represent any quantity!

4) TIME

- a) How many trees can students touch in 10 seconds, 20 seconds, etc.
- b) For students who want to have races, allow them to estimate how long it will take to run the distance, then they can run while you record their time!
- b) Ask students questions and discuss! How long is recess? How long does it take to get ready to go outside? What is the difference between getting ready in the winter and the summer? How many minutes do I have left once I get outside?



Math in Nature Activities

5) PATTERNS

- a) Find nature objects and create patterns on the ground. AB pattern: leaf, acorn, etc. Allow students to create an AB pattern, then ABC pattern, then ABCD pattern and ask them to create their own!
- b) Create increasing or decreasing patterns with objects. Shape 1: 3 acorns, Shape 2: 5 acorns Shape 3: 7 acorns Shape 4: 9 acorns What is the pattern rule? For older students, ask them to create an expression or equation to define the pattern and graph it in class!

6) ADDITION AND SUBTRACTION NATURE STORIES

- a) Find nature objects to count forwards and backwards. Teach students how to cross over the tens.
- b) Organize the nature objects in groups of 2,3,4,5,6,7,8,9 or 10. Encourage counting and whisper skip counting the items to develop pre-multiplication skills.
- c) Attach the symbolic form to the items. Draw numbers in the dirt, or create the numbers with the nature objects.
- d) Explain how the zero is hiding behind the ones number.

7) MULTIPLICATION AND DIVISION NATURE STORIES

- a) Ask students to collect different nature objects to create a story and place them in rows and columns in an array. For example: 3 groups of 5 sticks. I have 3 groups of 5 sticks. How many sticks do I have altogether? (repeated addition or multiplication)
- b) Change the same story to show division. I have 15 sticks and I share them between 3 squirrels. How many sticks does each squirrel get? (sharing means division)
- c) To change difficulty, students find more objects and increase the level of difficulty of the problem. Students can return to class and write their problem stories.

8) FRACTIONS

- a) Ask students to collect nature objects. Separate the total number of objects in half and show how many there are in each half. Repeat for thirds, quarters, etc.
- b) Find one stick and break it in half to show two halves. Then find another stick and break it in quarters. See if students can discover equivalent fractions! One half stick is the same as two quarters. Ask students to show one whole stick and a half. This would show mixed fractions and then turn the 1 and $\frac{1}{2}$ sticks into $\frac{3}{2}$.
- c) Ask students to create their own nature fraction equations!

