

Cookies & Jars

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Topic: Algebra and Patterns

Curriculum Competencies & Content Objectives:

- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Use logic and patterns to solve puzzles and play games Grade Levels: can be altered for any grade

Resource: <https://www.youtube.com/watch?v=pHE5nvx14ko&fbclid=IwAR09Lgwz46D-1rSJGi0E0X6pU9Sdv7SKEVMgqHRr-MPO2STryKaTL-h6TI8>

Materials Needed (per group): ● Cookies and jars (or similar manipulatives)

Description: Cookies & Jars is an algebra puzzle where students try to find how many cookies and jars there are with the following clues:

- If each jar has three cookies, one jar will be empty.
- If each jar has two cookies, there will be one cookie left over.

This puzzle has multiple paths to solution, which allows an entry point for a wide range of students. Students can solve this problem using a system of linear equations (shown below) or those who are not familiar with algebra can find a solution using manipulatives such as cookies and jars according to the given clues. Teachers can challenge students who solved the question using a system of equations by encouraging them to find the solution without using algebra (by manipulating cookies and jars). This game can be played in many ways. Students can work individually using the path they prefer, collaboratively with peers in a group, or as a whole class. Clues can also be altered for a more challenging problem.

Solution (using a system of equations): Let C be the number of cookies, and J be the number of jars, then we have

$$C = 3 \cdot (J - 1)$$

$$C = 2 \cdot J + 1$$

By solving this system of equations, we get $J = 4$ and $C = 9$. Therefore, there are 4 jars and 9 cookies.

Cookies & Jars Activity Sheet



If each jar has three cookies, one jar will be empty.



If each jar has two cookies, there will be one cookie left over.

How many cookies?
How many jars?