Dividing pancakes

ACiQ | v9.0

Teaching strategies for thinking about fractions

Best for

- Year level: 3 and 6
- Fraction construct: Division

Overview

Description	This activity is designed to support students to develop understanding of the **fractions as division** fraction construct, which is foundational in students' development of fractional thinking. Through the activity, students can be supported to understand that: • numbers greater than one can be split into parts and equally distributed among people • sometimes, to share items, each person will receive an amount that can only be represented using a fraction.
Learning focus	**Australian Curriculum: Years 3 and 6 Mathematics**
	Number • recognise and represent unit fractions including $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$ and $\frac{1}{10}$ and their multiples in different ways; combine fractions with the same denominator to complete the whole (AC9M3N02) • solve problems that require finding a familiar fraction, decimal or percentage of a quantity, including percentage discounts, choosing efficient calculation strategies and using digital tools where appropriate (AC9M6N07)
	General capability: Numeracy learning progression
	Number sense and algebra: Interpreting fractions • re-imagining the whole — divides a whole into different fractional parts for different purposes (P4) • equivalence of fractions — creates equivalent fractions by dividing the same-sized whole into different parts (P5) • fractions as numbers — connects the concepts of fractions and division: a fraction is a quotient, or a division statement (P6) • comparing fractions — identifies a fraction as a rational number that has relative size (P7)
Teacher preparation	• Assemble resources: – playdough – implements for cutting – plates or another suitable surface.

	Example: Activity in progress
	

Suggested implementation

1. Organise students into pairs with one ball of playdough each.
2. Direct students to partition the playdough into the number of pancakes specified and then determine how it can be split evenly between the number of people before cutting.
3. Prompt students to use the playdough to make different numbers of pancakes shared between different numbers of people, such as:
    a. three pancakes to share between four people
    b. four pancakes to share between three people
    c. nine pancakes to share between 12 people.
4. Student responses can be compared and discussed with opportunities for students to explain their process.
5. Ask students to determine three more ways they could divide pancakes.
6. Conclude with a whole class discussion. Consider using the following questions to lead a discussion:
    a. How did you decide where to cut the pancakes?
    b. Did having a physical model make it easier for you to understand?
    c. Did you see any links between how you write the fraction and the number of people per group?
    d. Were there shares of pancakes that were harder to figure out?
    e. Did you ever come up with multiple ways to split the pancakes?
    f. What mathematical operations helped you to figure out how much pancake each person gets?

Variations

1. This activity could be adapted for lower year levels by:
    a. using simple fractions, e.g. halves, quarters and thirds
    b. only selecting numbers that partition easily, e.g. two pancakes shared between four.
2. This activity could be adapted for higher year levels by including scenarios where the total cannot be partitioned easily, e.g. three pancakes shared between four.

References

This activity is inspired by Australian Association of Mathematics Teachers. (n.d.). *Dividing pancakes*, Top drawer teachers: Resources for teachers of mathematics. https://topdrawer.aamt.edu.au/Fractions/Activities/Dividing-pancakes