

Multiplication squares

Teaching strategies for thinking about fractions

Best for

- Year level: 4
- 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 to students' understanding of fractions. Through the activity below, students can be supported to understand that: • equivalent fractions come from related divisions • there are infinite possible equivalent fractions.
Learning focus	Australian Curriculum: Years 3 and 4 Mathematics Algebra • recall and demonstrate proficiency with multiplication facts for 3, 4, 5 and 10; extend and apply facts to develop the related division facts (AC9M3A03) Number • find equivalent representations of fractions using related denominators and make connections between fractions and decimal notation (AC9M4N03) General capability: Numeracy progression Number sense and algebra: Interpreting fractions • coordinating composite units — identifies and represents multiplication in various ways and solves simple multiplicative problems using these representations (P5) • connects the concepts of fraction and division: a fraction is a quotient, or a division statement (P6)
Teacher preparation	• Identify appropriate groupings for students. This strategy works best when students are in pairs. • Assemble the following resources for each group: – multiplication square – writing materials. Resource  Multiplication square template Print and cut out.

Suggested implementation

1. Organise students into groups and distribute one multiplication square per group.
2. Show students how multiplication squares can be used to multiply two numbers. You may like to ask them to perform some multiplications.

Example: Use a multiplication square to multiply two numbers

1	2	3	4	5
2	4	6	8	10
3	6	9	12	15
4	8	12	16	20
5	10	15	20	25

3. Use any two rows to represent the numerator and denominator of a fraction and demonstrate how equivalent fractions can be found by reading along these rows. You may like to show students how they can fold the square to help align those values and make them easier to see.

Example: Fold two rows to represent numerator and denominator

4	8	12	16	20	24	28	32	36	40
9	18	27	36	45	54	63	72	81	90

4. Call out fractions and have students determine and write down any equivalent fraction. Consider calling out fractions that are not in simplest form and ask students to simplify them or specify what number is required as the numerator or denominator for an additional challenge.
5. Lead the whole class in discussing the following questions:
 - a. What helped you find equivalent fractions more quickly?
 - b. What stayed the same when you found equivalent fractions?
 - c. Why does multiplying the numerator and denominator by the same number keep the value of the fraction the same?
 - d. Is there a limit to how many equivalent fractions we can make?
 - e. When do we need to find equivalent fractions?

Variation

If students feel confident, combine two pairs to form a group of four. One pair can pose questions while the other responds, before swapping roles.



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