

Maths - Year 5

Numbers and the Number System 2: Exploring equivalence with fractions

Key Vocabulary

Equivalent fraction	Two or more fractions with the same value, represented differently.
Denominator	The lower number of a fraction.
Numerator	The upper number of a fraction.
Proportion	Used to express a fraction of a whole e.g. $\frac{1}{2}$ of the grapes are green.
Proper fraction	A fraction where the numerator is smaller than the denominator.
Improper fraction	A fraction where the numerator is bigger than the denominator.
Mixed number	A number written as a whole and a fraction e.g. $2\frac{1}{2}$.
Factor	A whole number that divides into another number exactly.
Common factor	A whole number that divides into two or more other numbers exactly.
Multiple	A product of two whole numbers.
Equivalent	Numbers or fractions that have the same value but are represented in different ways.
Scale up/down	Make bigger or smaller by a given amount.
Simplest form	A fraction represented with the smallest number possible.

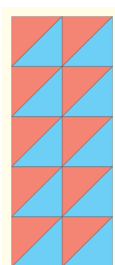
Mathematical Skills

- Explain equivalence between improper fractions and mixed numbers.
- Use dividing to convert improper fractions to mixed numbers.
- Use knowledge of factors and multiples to recognise and explain equivalences between proper fractions.
- Use knowledge of multiples and factors to create equivalent fractions and illustrate these with structured apparatus.
- Explain that, when scaling up, proportions need to be constant, so both numerator and denominator are multiplied by the same number.

Mathematical Methods

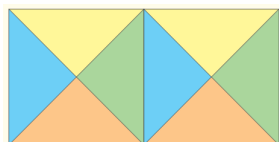
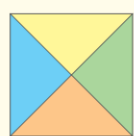
- Introducing improper fractions and mixed numbers—halves e.g. Half of a ten shape would be 5 but can be represented in different ways e.g. $\frac{1}{2} \times 10 = \frac{10}{2} = 5$.

- Exploring connections between improper fractions and mixed numbers—halves.



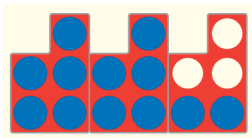
Number of squares	Amount of blue in halves	Amount of blue in whole or mixed number
1	$\frac{1}{2}$	$\frac{1}{2}$
2	$\frac{2}{2}$	1
3	$\frac{3}{2}$	$1\frac{1}{2}$
4	$\frac{4}{2}$	2
5	$\frac{5}{2}$	$2\frac{1}{2}$
6	$\frac{6}{2}$	3
7	$\frac{7}{2}$	$3\frac{1}{2}$
8	$\frac{8}{2}$	4
9	$\frac{9}{2}$	$4\frac{1}{2}$
10	$\frac{10}{2}$	5

- Exploring connections between improper fractions and mixed numbers—quarters.



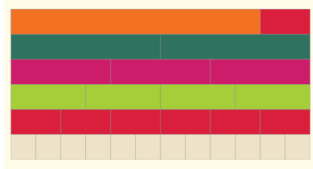
Agree that $\frac{1}{4}$ of each tile is blue, and that with 2 tiles there are 2 blue quarters, which is the same as $\frac{1}{2}$ of 1 tile.

- Converting mixed numbers to improper fractions e.g.



$$\frac{12}{5} \text{ is the same as } 2 \text{ whole ones and } \frac{2}{5} = 2\frac{2}{5}$$

- Recognising equivalent fractions e.g.

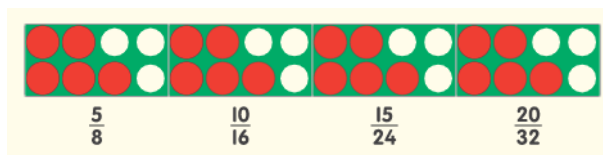


$$\frac{1}{2} = \frac{6}{12}, \frac{3}{4} = \frac{9}{12}, \frac{1}{3} = \frac{4}{12}, \frac{5}{6} = \frac{10}{12}$$

- Using equivalence to scale recipes up e.g. increasing the number of jugs of lemonade you are making.

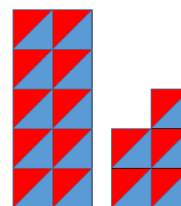
Number of jugs	Lemon juice	Water
1	$\frac{1}{5}$	$\frac{4}{5}$
2	$\frac{2}{10}$	$\frac{8}{10}$
3	$\frac{3}{15}$	$\frac{12}{15}$
4	$\frac{4}{20}$	$\frac{16}{20}$
5	$\frac{5}{25}$	$\frac{20}{25}$
10	$\frac{10}{50}$	$\frac{40}{50}$

- Illustrating equivalence with Numicon shapes e.g.



Can you..?

- What fraction of the tiles are coloured blue? Write this as an improper fraction.
- Now write it as a mixed number.
- Can you write $12\frac{1}{2}$ in another way?



- Complete $\frac{5}{8} = \frac{\square}{24}$