# Fractions

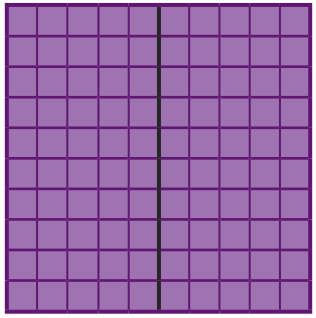
Knowledge Organiser

## Key Vocabulary

- numerator
- denominator
- unit fraction
- non-unit fraction
- whole
- equivalent
- mixed number
- improper fraction
- simplest form
- multiple
- common denominator
- common numerator

## Equivalent Fractions

To find equivalent fractions, we multiply or divide the numerator and denominator by the same number.



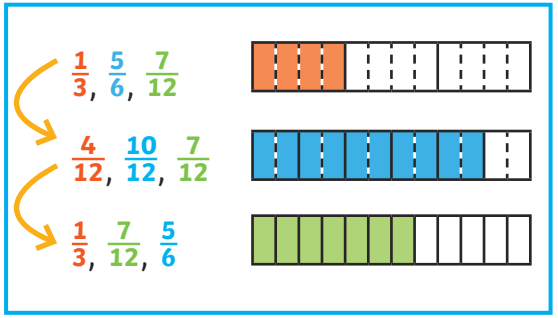
$\frac{1}{2} = \frac{5}{10} = \frac{50}{100}$

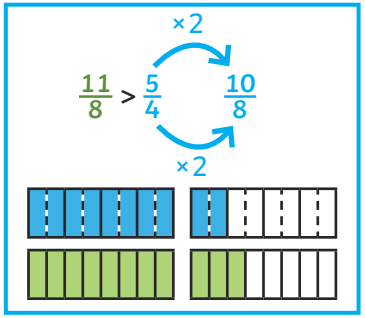
×5 ×10

×5 ×10

## Compare and Order Fractions

We can compare and order fractions by using common denominators.




## Mixed Numbers

Mixed numbers contain a whole number and a fraction.

whole → $2\frac{1}{4}$ ← fraction

## Improper Fractions

An improper fraction has a numerator which is greater than or equal to the denominator.

$\frac{5}{3}$

## Convert an Improper Fraction to a Mixed Number

$\frac{9}{4}$

$9 \div 4 = 2r1$ → $2\frac{1}{4}$

Divide the numerator by the denominator.

This shows you the whole number and the fraction.

## Convert a Mixed Number to an Improper Fraction

Multiply the whole by the denominator to make an improper fraction.

$2\frac{5}{6} = \frac{12}{6} + \frac{5}{6} = \frac{17}{6}$

Add the fractions together.

## Adding and Subtracting Fractions

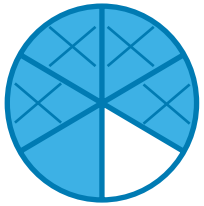
To add or subtract fractions with denominators that are multiples of the same number, we must change one fraction to have the same denominator.

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$

$\frac{4}{5} - \frac{3}{5} = \frac{1}{5}$

$\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$

$\frac{5}{6} - \frac{2}{3} = \frac{5}{6} - \frac{4}{6} = \frac{1}{6}$



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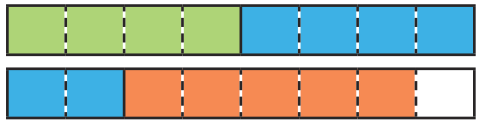
## Add Fractions Where the Total is Greater Than 1

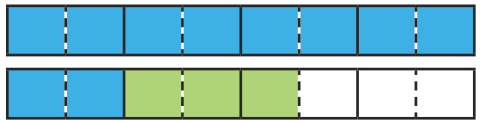
$\frac{1}{2} + \frac{3}{4} + \frac{5}{8} = \frac{4}{8} + \frac{6}{8} + \frac{5}{8} = \frac{15}{8} = 1\frac{7}{8}$



## Add Mixed Numbers

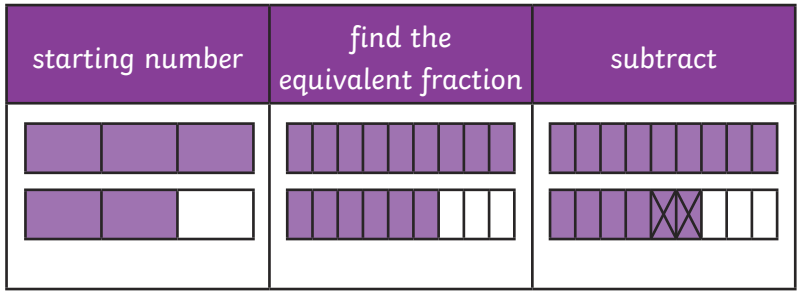
$1\frac{1}{4} + \frac{3}{8} = 1\frac{2}{8} + \frac{3}{8} = 1 + \frac{5}{8} = 1\frac{5}{8}$

$1\frac{1}{4} + \frac{3}{8} = \frac{5}{4} + \frac{3}{8} = \frac{10}{8} + \frac{3}{8} = \frac{13}{8} = 1\frac{5}{8}$



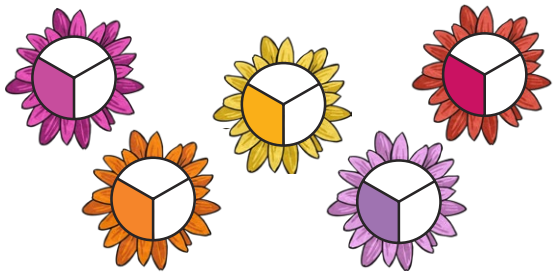
## Subtract from a Mixed Number

$1\frac{2}{3} - \frac{2}{9} = 1\frac{6}{9} - \frac{2}{9} = 1\frac{4}{9}$



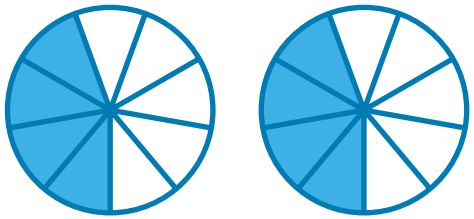

## Multiply Unit Fractions by an Integer

$\frac{1}{3} \times 5 = \frac{5}{3}$



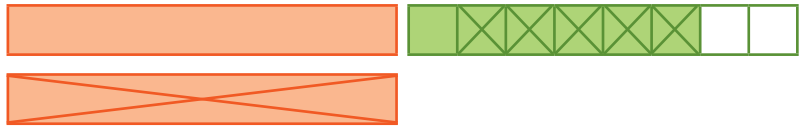
## Multiply Non-Unit Fractions by an Integer

$2 \times \frac{4}{9} = \frac{8}{9}$



## Subtract Two Mixed Numbers

$2\frac{3}{4} - 1\frac{5}{8} = 1\frac{1}{8}$



$2 - 1 = 1$

$\frac{3}{4} - \frac{5}{8} = \frac{1}{8}$

## Multiply Mixed Numbers by Integers

Convert to an improper fraction and multiply the numerator by the integer.

$2\frac{1}{4} \times 2 = \frac{9}{4} \times 2 = \frac{18}{4} = 4\frac{2}{4} = 4\frac{1}{2}$

Use repeated addition.

$2\frac{1}{4} \times 2 = 2\frac{1}{4} + 2\frac{1}{4} = 4\frac{2}{4} = 4\frac{1}{2}$

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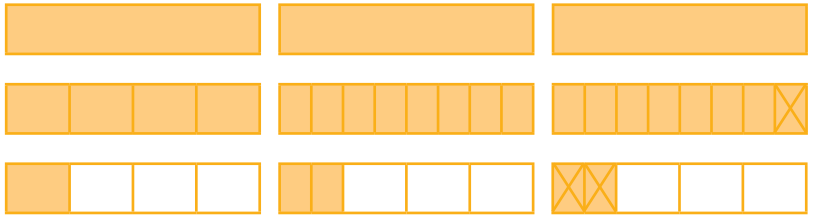
## Subtract from a Mixed Number - Breaking the Whole

$2\frac{1}{4} - \frac{3}{8} = 2\frac{2}{8} - \frac{3}{8} = 1\frac{10}{8} - \frac{3}{8} = 1\frac{7}{8}$