

Key Vocabulary

numerator
denominator
unit fraction
non-unit fraction
whole

Equivalent Fractions

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

$$\frac{1}{2} \xrightarrow{\times 5} \frac{5}{10} \xrightarrow{\times 10} \frac{10}{20}$$

Compare and Order Fractions

We can compare and order fractions by using common denominators.

equivalent

Mixed Numbers

Improper Fractions

mixed number

Mixed numbers contain a whole number and a fraction.

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

$$\frac{5}{3}$$

improper fraction

Convert an Improper Fraction to a Mixed Number

Convert a Mixed Number to an Improper Fraction

simplest form
multiple

$\frac{9}{4}$

$9 \div 4 = 2r1$ $\frac{1}{4}$

Divide the numerator by the denominator.

This shows you the whole number and the 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.

common denominator

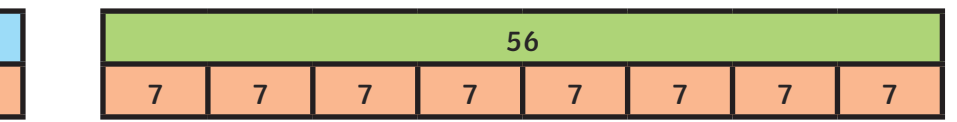
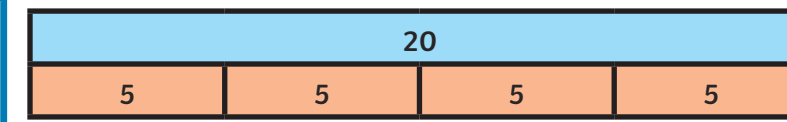
Fractions of Quantities

common numerator

To find a fraction of a number, divide by the denominator and multiply by numerator.

To find quarters of 20:

To find eighths of 56:




$\frac{1}{4}$ of 20 = 5 $\frac{2}{4}$ of 20 = 10 $\frac{3}{4}$ of 20 = 15 $\frac{4}{4}$ of 20 = 20



$\frac{1}{8}$ of 56 = 7 $\frac{2}{8}$ of 56 = 14 $\frac{3}{8}$ of 56 = 21 $\frac{4}{8}$ of 56 = 28
 $\frac{5}{8}$ of 56 = 35 $\frac{6}{8}$ of 56 = 42 $\frac{7}{8}$ of 56 = 49 $\frac{8}{8}$ of 56 = 56

Adding and Subtracting Fractions

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

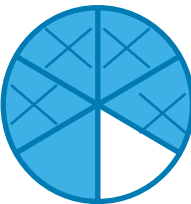


$\frac{4}{5} - \frac{3}{5} = \frac{1}{5}$

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

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




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

Add Fractions When 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

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


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

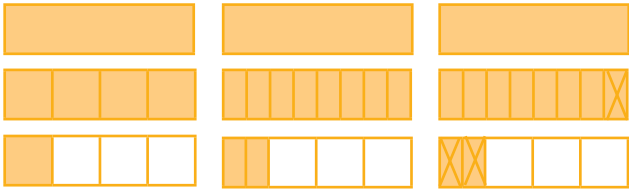
Subtract From a Mixed Number

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

starting number	find the equivalent fraction	subtract
		
		

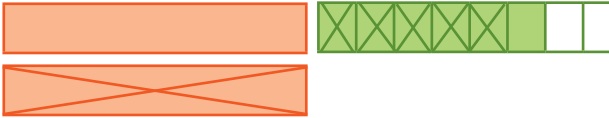
Subtract from a Mixed Number - Breaking the Whole

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



Subtract Two Mixed Numbers

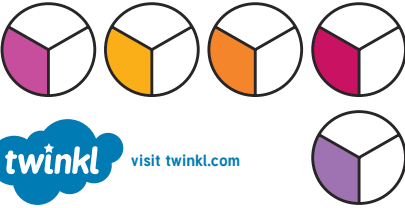

$$2\frac{3}{4} - 1\frac{5}{8} = 1\frac{1}{8}$$



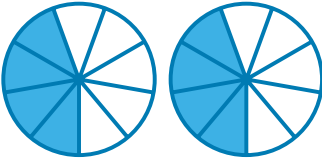
$2 - 1 = 1$

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

Multiply Unit Fractions by an Integer

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



Multiply Non-Unit Fractions by an Integer



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

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.

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