



FRACTIONS

KNOWLEDGE ORGANISER

Year 5



Overview

Fractions we learn:



- Equivalent Fractions
- Improper Fractions to Mixed Numbers
- Mixed Numbers to Improper Fractions
- Number Sequences
- Compare/ Order Fractions Less/ Greater than 1
- Add Fractions
- Add 3+ Fractions
- Add Mixed Numbers
- Subtract Fractions
- Subtract Mixed Numbers
- Multiply Fractions by Integer
- Fractions of an Amount
- Fractions as Operators

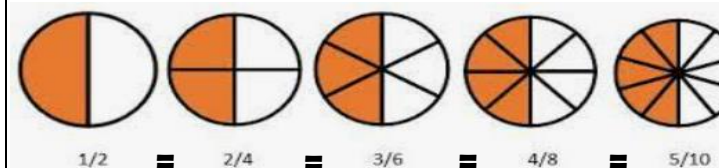
This learning is important because...

it helps us to understand the parts that can make up a whole amount. This is needed in lots of areas of life (e.g. sharing, cooking, making). Fractions are the building blocks of other learning in maths.

Equivalent Fractions and Fractions of Quantities

Equivalent Fractions

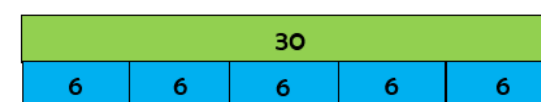
-Equivalent fractions have different numerators and denominators, but have the same value, e.g. $\frac{1}{2} = \frac{2}{4}$.



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

Fractions of Quantities

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

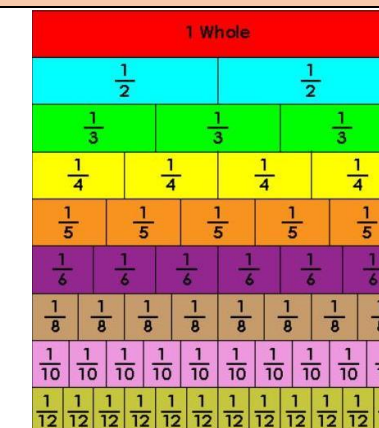


e.g. for $\frac{1}{6}$ of 30, calculation is $30 \div 6 = 5$

for $\frac{4}{6}$ of 30, calculation is $30 \div 6 = 5$. $5 \times 4 = 20$

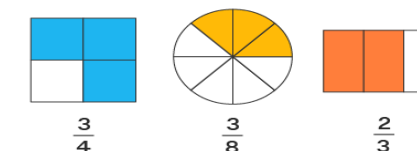
Unit Fractions

A unit fraction is as a fraction whose numerator is 1. It represents 1 shaded part of all the equal parts of the whole.



Non-Unit Fractions

A non-unit fraction is a fraction where the numerator (the number on the top half of the fraction) is greater than 1.



Mixed Numbers and Improper Fractions

Mixed numbers include a whole number and a fraction.

Whole number 3 $\frac{4}{5}$ Fraction

Improper Fractions have a numerator that is greater than or equal to the denominator.

Numerator is greater than... $\frac{13}{5}$ The denominator

To convert mixed numbers to improper fractions...

$$2\frac{1}{4} \rightarrow \frac{2 \times 4}{4} + \frac{1}{4} \rightarrow \frac{8}{4} + \frac{1}{4} \rightarrow \frac{9}{4}$$

1. Multiply the whole number by the denominator.
2. Add the fractions together!

To convert improper fractions to mixed numbers...

$$\frac{5}{3} = 5 \div 3 = 1 \text{ R}2$$

1. Divide the numerator by the denominator.

2. The quotient shows the whole number and the fraction.

To order mixed numbers and improper fractions...

1. Find the same denominator.

2. Convert mixed numbers to improper fractions (or vice versa) using the process above. Then order.

$$\frac{3}{5}, \frac{9}{4}, 3\frac{4}{5}$$
$$\frac{12}{20}, \frac{45}{20}, \frac{76}{20}$$

To multiply mixed numbers by integers...

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

$$3\frac{1}{3} \times 2 = \frac{10}{3} \times 2 = \frac{20}{3} = 6\frac{2}{3}$$

b. Use repeated addition.

$$3\frac{1}{3} \times 2 = 3\frac{1}{3} + 3\frac{1}{3} = 6\frac{2}{3}$$

Adding and Subtracting Fractions

Adding Mixed Numbers

-Convert the mixed number to improper fraction, then make the denominators the same. Add the fractions and then convert back to mixed number.

$$1\frac{2}{3} + \frac{2}{3} = \frac{5}{3} + \frac{2}{3} = \frac{7}{3} = 2\frac{1}{3}$$

Subtracting Two Mixed Numbers

$$9\frac{1}{2} - 5\frac{1}{4}$$

Change to improper fractions

$$= \frac{19}{2} - \frac{21}{4}$$

Change to common denominator

$$= \frac{19 \times 2}{2 \times 2} - \frac{21}{4} = \frac{38}{4} - \frac{21}{4}$$

Subtract the numerators

$$= \frac{17}{4} = 4\frac{1}{4}$$

Change to mixed numbers

Subtracting from a Mixed Number

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

-Find the common denominator before subtracting. Remember to give your answer as a mixed number (unless told otherwise).

Subtracting from a Mixed Number – Breaking the Whole

Step 1

$$3\frac{2}{7} - \frac{5}{7}$$

Step 2

$$3\frac{2}{7} = 2 + 1 + \frac{2}{7}$$

Step 3

$$= 2 + \frac{7}{7} + \frac{2}{7} = 2\frac{9}{7} = 2\frac{4}{7}$$

Key Vocabulary

Unit Fraction

Non-unit Fraction

Simplest Form

Improper Fraction

Equivalent Fraction

Common Numerator

Common Denominator

Mixed Number