

Learning Objectives

- ❖ To use common factors to simplify fractions
- ❖ To compare and order fractions, including fractions > 1
- ❖ To add and subtract fractions with different denominators and mixed numbers
- ❖ To multiply simple pairs of proper fractions, writing the answer in its simplest form
- ❖ To divide proper fractions by whole numbers
- ❖ To identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- ❖ To multiply one-digit numbers with up to two decimal places by whole numbers
- ❖ To use written division methods in cases where the answer has up to two decimal places
- ❖ To solve problems which require answers to be rounded to specified degrees of accuracy
- ❖ To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Four Operations

Same Denominators



$$\frac{4}{7} + \frac{2}{7} = \frac{6}{7}$$



$$\frac{8}{11} - \frac{3}{11} = \frac{5}{11}$$

Different Denominators

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

Multiples of 7: 7, 14, 21, 28, **35**
 Multiples of 5: 5, 10, 15, 20, 25, 30, **35**

$$\frac{2}{7} = \frac{10}{35}, \frac{3}{5} = \frac{21}{35}$$

$$\frac{10}{35} + \frac{21}{35} = \frac{31}{35}$$

$$\frac{9}{10} - \frac{1}{4}$$

Multiples of 10: 10, **20**
 Multiples of 4: 4, 8, 12, 16, **20**

$$\frac{9}{10} = \frac{18}{20}, \frac{1}{4} = \frac{5}{20}$$

$$\frac{18}{20} - \frac{5}{20} = \frac{13}{20}$$

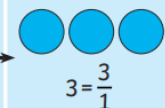
Multiplying Fractions by Fractions

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

Multiplying Fractions by Whole Numbers



$$\frac{2}{5} \times 3$$



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

$$\frac{2}{5} \times \frac{3}{1} = \frac{6}{5} = 1 \frac{1}{5}$$

$$\frac{2}{5} \div 2 = \frac{1}{5}$$

Multiplication and division are the inverse of one another so:

$$\div 2 \text{ is the same as } \times \frac{1}{2}$$

$$\frac{2}{5} \times \frac{1}{2} = \frac{2}{10}$$

Add or subtract the whole numbers and fractions separately.

$$2 \frac{2}{5} + 1 \frac{3}{10}$$

$$2 + 1 = 3$$

$$\frac{2}{5} + \frac{3}{10} = \frac{4}{10} + \frac{3}{10} = \frac{7}{10}$$

$$3 + \frac{7}{10} = 3 \frac{7}{10}$$

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

$$2 - 1 = 1$$

$$\frac{1}{2} - \frac{1}{4} = \frac{2}{4} - \frac{1}{4} = \frac{1}{4}$$

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

Convert the mixed numbers to improper fractions.

$$2 \frac{2}{5} + 1 \frac{3}{10}$$

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

$$2 \frac{2}{5} = \frac{12}{5}$$

$$1 \frac{3}{10} = \frac{13}{10}$$

$$2 \frac{1}{2} = \frac{5}{2}$$

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

$$\frac{12}{5} + \frac{13}{10} = \frac{24}{10} + \frac{13}{10} = \frac{37}{10}$$

$$\frac{37}{10} = 3 \frac{7}{10}$$

$$\frac{5}{2} - \frac{5}{4} = \frac{10}{4} - \frac{5}{4} = \frac{5}{4}$$

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

Four Rules with Fractions

Now that we can add, subtract, multiply and divide fractions, we can combine all **four rules** or operations

It is important to remember the rule of BODMAS before completing calculations.

Brackets
Orders
Division
Multiplication
Addition
Subtraction

$$\frac{2}{7} + \frac{6}{7} \div 2$$

$$\frac{6}{7} \div 2 = \frac{3}{7}$$

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

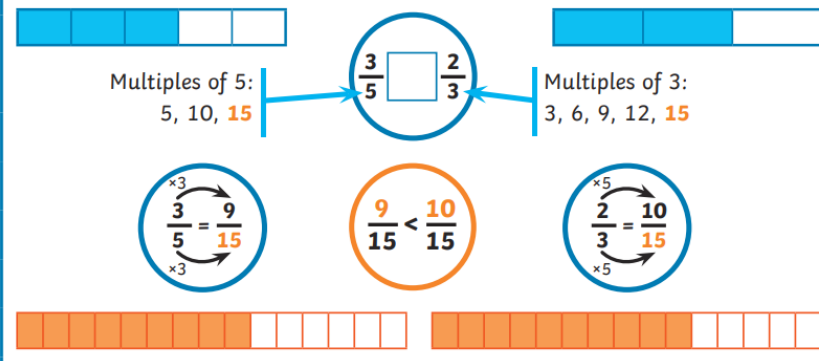
Compare and Order

Key Vocabulary

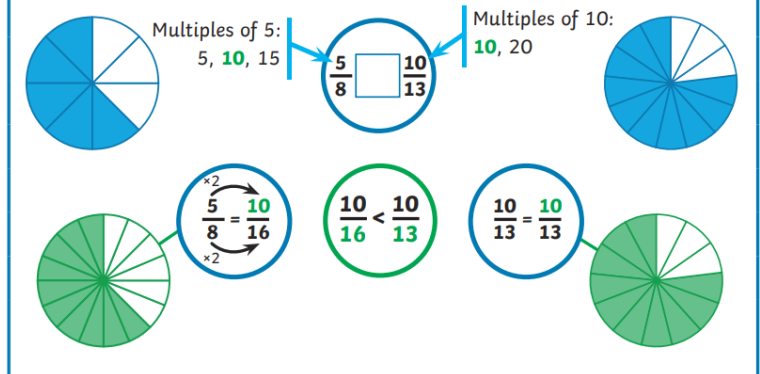
Numerator
Denominator
Proper fraction
Improper fraction
Factor
Highest common multiple
Lowest common multiple
Equivalents
Common numerator
Common denominator
Decimal equivalent
Simplify
Simplest form
Mixed number
Whole number

Compare and Order Fractions

Use the Common Denominator



Use the Common Numerator

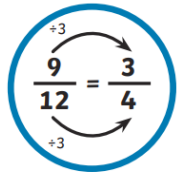


Simplify Fractions



Factors of 9:
1, 3, 9

Factors of 12:
1, 2, 3, 4, 6, 12



Key Concepts

- use common factors to simplify fractions and use common multiples to express fractions in the same denomination
- compare and order fractions, including fractions > 1
- multiply simple pairs of proper fractions, writing the answer in its simplest form
- divide proper fractions by whole numbers
- find the whole amount from the known value of a fraction

What I Should Already Know:

- ❖ How to compare and order fractions whose denominators are all multiples of the same number
- ❖ How to identify, name and write equivalent fractions of a given fraction
- ❖ How to recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements
- ❖ How to add and subtract fractions with the same denominator and denominators that are multiples of the same number
- ❖ How to multiply proper fractions and mixed numbers by whole numbers
- ❖ How to read and write decimal numbers as fractions
- ❖ How to recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- ❖ How to round decimals with two decimal places to the nearest whole number and to one decimal place
- ❖ How to read, write, order and compare numbers with up to three decimal places
- ❖ How to solve problems involving number up to three decimal places
- ❖ How to recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
- ❖ How to solve problems which require knowing percentage and decimal equivalents