

# YR6 FRACTIONS KNOWLEDGE ORGANISER

## 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

## Key Vocabulary

- numerator
- denominator
- factors
- multiples
- equivalent
- simplify
- mixed numbers
- proper fractions
- improper fractions

## Simplify Fractions

We can use our knowledge of equivalent fractions to **simplify fractions**. To find the simplest form of a fraction, we divide the numerator and denominator by their highest common factor.

$$\frac{12}{18} \quad \text{Factors of 12: } 1, 2, 3, 4, \mathbf{6}, 12$$

$$\quad \quad \quad \text{Factors of 18: } 1, 2, 3, \mathbf{6}, 9, 18$$

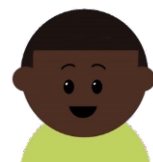


$$\frac{12}{18} \div 6 = \frac{2}{3}$$

## Compare and Order Fractions

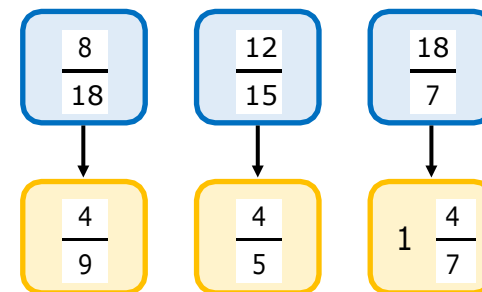
To **compare** and **order** fractions, we need to find a common denominator or numerator.

$$\frac{10}{12} \qquad \qquad \frac{5}{9}$$



$$\frac{10}{12} = \frac{5}{6} \text{ so } \frac{5}{6} > \frac{5}{9}$$

These fractions have been ordered from smallest to greatest. Their equivalent fractions using common numerators are shown beneath.

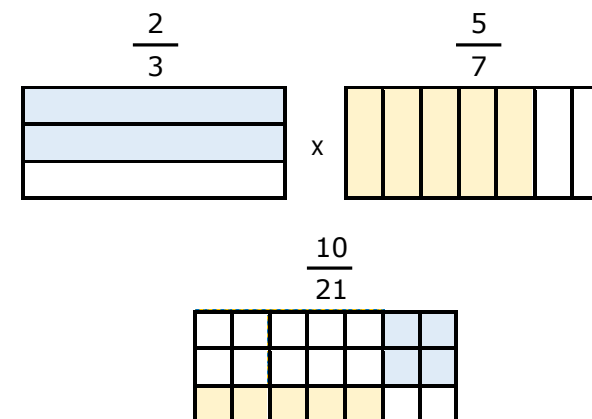


## Multiply Fractions by Fractions

To **multiply fractions by fractions**, we multiply the numerators together and multiply the denominators together.

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

We can use area models to represent multiplication calculations visually.



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We can multiply fractions by fractions to find fractions of fractions.



$$\frac{4}{5} \text{ of } \frac{2}{3} = \frac{4}{5} \times \frac{2}{3} = \frac{8}{15}$$



$$\frac{8}{13} \div 6$$

$$\frac{8}{13} = \frac{24}{39}$$

$$\frac{24}{39} \div 6 = \frac{4}{39}$$

## Divide Fractions by Integers

To **divide fractions by integers**, we divide the numerator by the whole number.

If the numerator is a multiple of the integer, then this is nice and simple!

$$\frac{6}{11} \div 3 = \frac{2}{11}$$

If the numerator is not a multiple of the integer, then we could use diagrams to help us.

$$\frac{3}{4} \div 2 = \frac{3}{8}$$



We could also find an equivalent fraction with a numerator that is a multiple of the integer to help us divide the fraction equally.

We can use our knowledge of multiplying fractions by unit fractions to help us divide fractions by integers.

$$\frac{8}{9} \div 4 = \frac{8}{9} \times \frac{1}{4} = \frac{8}{36} = \frac{2}{9}$$

This takes us back to finding fractions of fractions.

$$\frac{7}{8} \div 5$$

isthesameas...

$$\frac{7}{8} \times \frac{1}{5}$$

which is the same as...

$$\frac{1}{5} \text{ of } \frac{7}{8}$$

## 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

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

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

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

## Find the Whole

We can find the whole amount using the known value of a fraction.

To do this, we divide the known value by the numerator and multiply this by the denominator.



Jane ate  $\frac{3}{5}$  of a box of strawberries. She ate 18 of them altogether.



18

$$18 \div 3 = 6 \text{ so } \frac{1}{5} = 6$$

$$6 \times 5 = 30 \text{ so the whole is } 30$$

There were 30 strawberries in Jane's box.