

Year 6 Knowledge Organiser Maths Autumn 2

Section 1

Factor	Factors are numbers that divide exactly into another number. e.g. 2 is a factor of 4 as $4 \div 2 = 2$
Common Factor	Numbers that divide exactly into two other numbers e.g. 4 is a common factor of 8 and 16
Numerator	The top number – How many parts you are interested in out of the whole
Denominator	The bottom number – How many parts to the whole
Common fraction	Common fractions are smaller than 1. They are also called proper fractions .
Improper fraction	Improper fractions are bigger than 1. They are also called top-heavy fractions .
Mixed number fraction	Mixed numbers are bigger than 1. They are a whole number and a fraction together. e.g. $2\frac{3}{4}$
Equivalent fractions	Equivalent fractions have the same value. $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$
Simplifying	To simplify a fraction, you divide the numerator and the denominator by the largest number that divides into both. This is also called reducing or simplifying .

Section 2

Simplifying fractions

To **simplify** you need to find the **highest common factor** (the highest number that will divide equally into the two numbers without any remainders) of **both the numerator and denominator**. You can do this using a factor bug.

numerator **18**
denominator **30**

To simplify a fraction, we divide both the numerator (top number) and the denominator (bottom number) by the same number.

If we divide both these numbers by 6, the fraction becomes:

18 divided by 6 = 3
30 divided by 6 = 5

$\frac{18}{30} \rightarrow \frac{3}{5}$

You then **divide the numerator and denominator** by that factor.

The trick is knowing what number to divide by – you need to find a number that you know both numerator and denominator will divide by without a remainder. Knowing your times tables well will help!

This will give you the **simplest form** of a fraction.

Another way of simplifying fractions is to use your times tables knowledge and keep reducing the fraction until you can go no further. e.g. $\frac{16}{20}$ divide top and bottom by 2 = $\frac{8}{10}$ divide by 2 again = $\frac{4}{5}$. This is the **simplest form**.

The simplest form is the smallest value the fraction can be whilst still being equivalent.

Section 3

Adding and subtracting fractions

We can use **equivalent** fractions to add fractions that do not have the same **denominator**.

For example: $\frac{3}{4} + \frac{1}{8}$

We need to change $\frac{3}{4}$ into an equivalent fraction with a denominator of 8.

$\frac{3}{4} = \frac{6}{8}$ (multiplied by 2)

Now we have: $\frac{6}{8} + \frac{1}{8} = \frac{7}{8}$

Denominator – The bottom number of a fraction.
Numerator – The top number of a fraction.
Equivalent – The same as.

To add or subtract fractions, they need to have the same denominator.

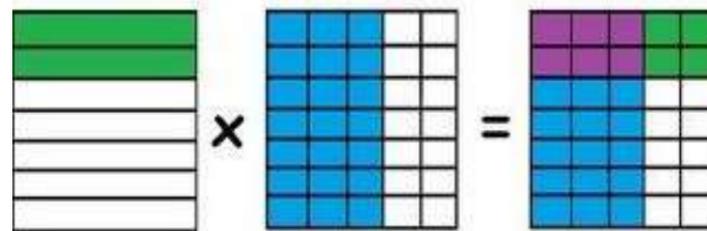
To do this, you will need to find equivalent fraction(s).

To find an equivalent fraction you must multiply or divide the numerator (top) and the denominator (bottom) by the same amount.

What you do to the bottom, you must do to the top.

Section 4

Multiplying fractions



$$\frac{2}{7} \times \frac{3}{5} = \frac{6}{35}$$

When multiplying fractions, you multiply the denominators and then multiply the numerators.

$$\frac{2}{4} \times \frac{3}{6} = \frac{6}{24}$$

You do not need the denominator to be the same.

The product of two fractions gives a smaller answer. The whole has been split into more parts.

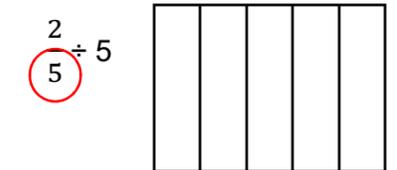
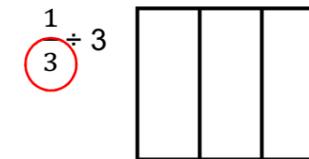
Multiplication is commutative – it doesn't matter which way round you multiply the quantities; the answer is the same.

Section 5

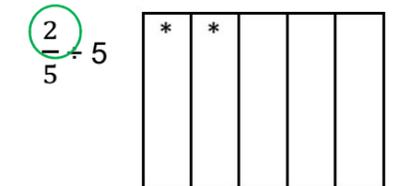
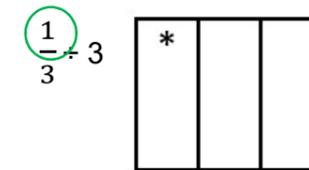
Dividing fractions by a whole number

Use a bar model to help you divide fractions by whole numbers

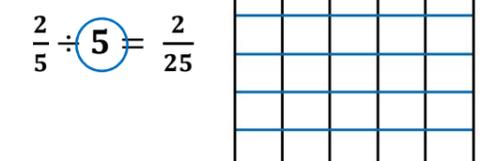
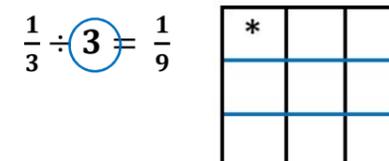
We start by drawing a model of the whole and splitting it into parts determined by the denominator.



Then put a dot in the sections determined by the numerator.



The next step is where we divide by the whole number and split the whole horizontally by this amount. Your whole amount will now be split into more parts.



The numerator stays the same and the denominator is the amount of parts you now have.