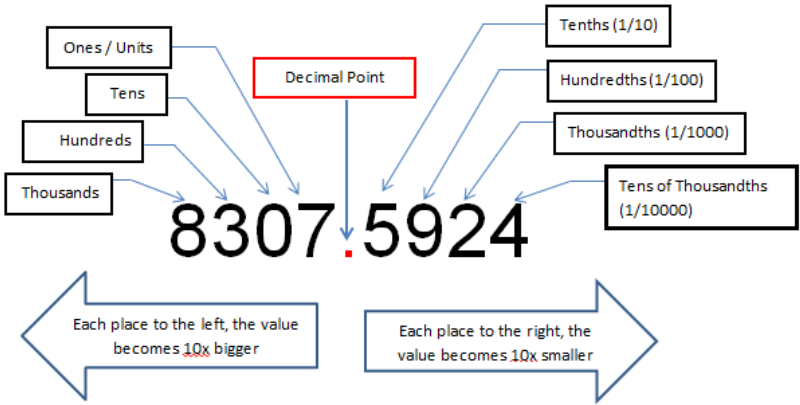
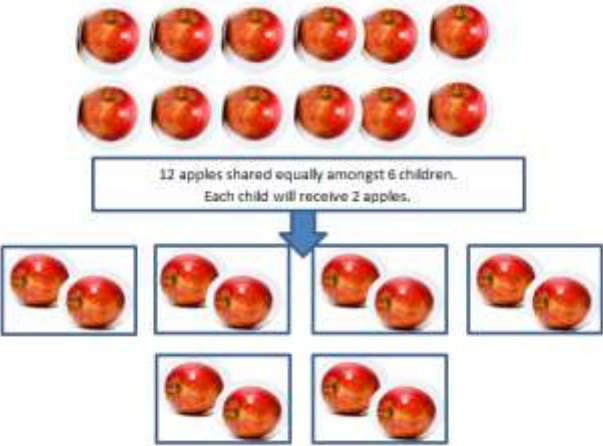


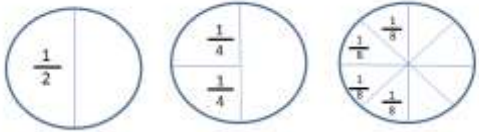
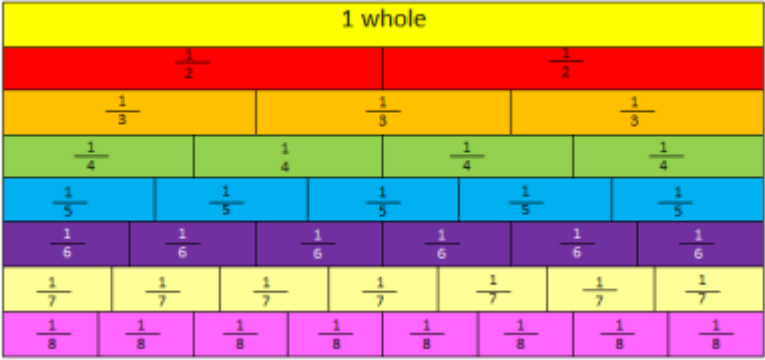

Fractions, decimal fractions and percentages

Terms	Illustrations	Definition
Common denominator		<p>When two or more fractions have the same denominator (the number on the bottom) they have a common denominator.</p> <p>You can only add or subtract fractions if they have the same common denominator e.g. $\frac{2}{5}$ and $\frac{3}{5}$</p>
Decimal fraction		<p>A fraction where the denominator (the bottom number) is a power of ten (such as 10, 100, 1000, etc). They are written with a decimal point. E.g.</p> <p>$\frac{7}{10}$ is a decimal fraction and it can be shown as 0.7. This is the equivalent to 7 tenths.</p> <p>$\frac{43}{100}$ is a decimal fraction and it can be shown as 0.43. This is the equivalent to 4 tenths and 3 hundredths.</p> <p>$\frac{51}{1000}$ is a decimal fraction and it can be shown as 0.051</p> <p>This is the equivalent to 5 hundredths and 1 thousandth.</p>

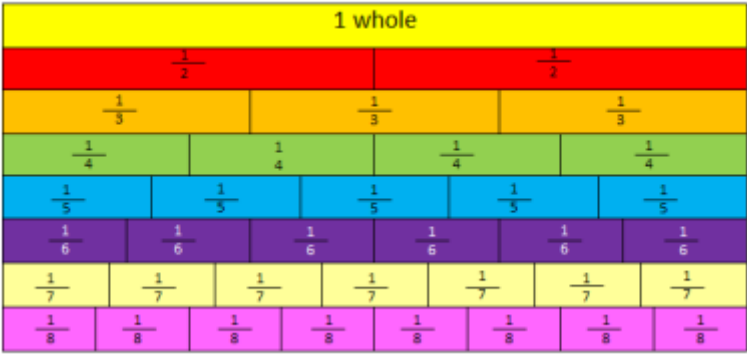
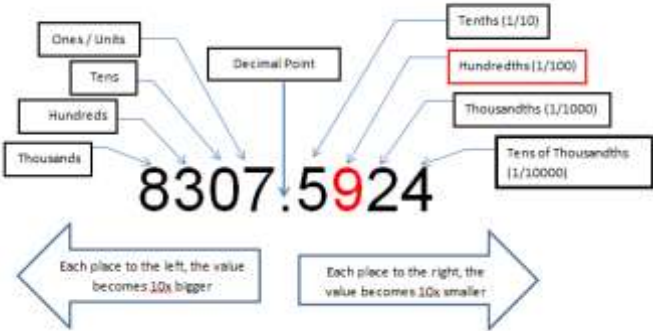
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<p>Decimal point</p>	 <p>The diagram shows the number 8307.5924 with a red box around the decimal point. Labels with arrows point to each digit: 'Thousands' (8), 'Hundreds' (3), 'Tens' (0), 'Ones / Units' (7), 'Tenths (1/10)' (5), 'Hundredths (1/100)' (9), 'Thousandths (1/1000)' (2), and 'Tens of Thousandths (1/10000)' (4). Two large arrows at the bottom indicate that values to the left of the point increase 10x per place, while values to the right decrease 10x per place.</p>	<p>A point or dot used to separate the whole number part from the fractional part of a number.</p> <p>In calculations, the decimal point does not move. Numbers to the right of the point are less than 1 and are represented as tenths, hundredths etc (see diagram).</p> <p>Numbers to the left of the decimal point are whole numbers. Units are often called 'ones'.</p>
<p>Denominator</p>		<p>The bottom number in a fraction, e.g. in $\frac{1}{2}$, 2 is the denominator.</p>
<p>Equal sharing / fair sharing</p>	 <p>The diagram shows 12 apples arranged in two rows of six. A text box states: "12 apples shared equally amongst 6 children. Each child will receive 2 apples." Below this, six boxes are shown, each containing two apples, representing the equal distribution.</p>	<p>Exploring early division through splitting a group of items equally into a number of smaller groups. This underpins the concept of fractions. <i>e.g. there are 12 apples and 6 children at the picnic. How many apples will each child receive so it is fair?</i></p> <p>It is also important to explore sharing unequally and having amounts 'leftover'.</p>

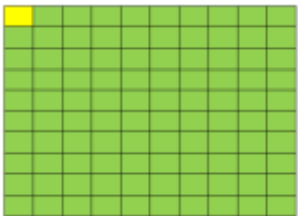
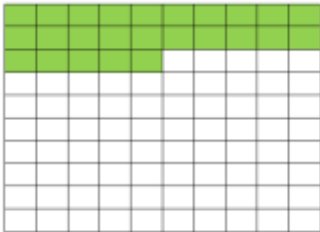
Fractions, decimal fractions and percentages

<p>Equivalent fractions</p>	 <p style="text-align: center;">$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$</p> 	<p>Fractions which have equal value are known as equivalent fractions. They may look different but can still have equal value, e.g. one half is equivalent to two quarters which is also equivalent to four eighths. A fraction wall is a visual way to understand commonly used equivalent fractions.</p>
<p>Fraction</p>	 <p>The green part is a fraction of a whole. 1 out of 5 parts is shaded green so the fraction of the green part is one fifth or $\frac{1}{5}$</p> <p>4 out of 5 parts of the whole are shaded yellow so the fraction of the yellow parts is four fifths or $\frac{4}{5}$</p>	<p>Part of a whole. The bottom number (denominator) in a fraction states how many parts the whole has been split equally in to. The top number (numerator) in a fraction states how many parts you have in that fraction, e.g. $\frac{3}{5}$ means the whole has been split into 5 equal parts and you are working with 3 of those parts.</p>

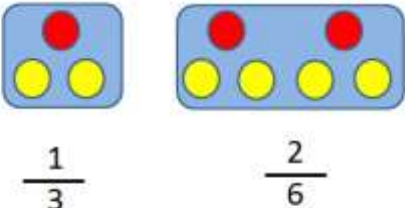

Fractions, decimal fractions and percentages

<p><u>Fraction wall</u></p>		<p>This is a wall where each row in the wall represents one whole number. Each row is split into different equal parts (fractions of the whole). It can help visualise equivalent fractions too.</p> <p>In this image, you can see such relationships as;</p> <ul style="list-style-type: none"> - two halves equals one whole - two quarters equals one half - four eighths equals two quarters and one half - one third equals two sixths <p>Etc...</p>
<p>Grouping</p>		<p>Understanding that a set of items can be grouped in to a number of smaller groups – sometimes in equal amounts, sometimes in unequal amounts.</p>
<p>Hundredths</p>		<p>1 part of 100 equal parts, e.g. 1/100, 0.01.</p> <p>One hundredth of this 100 block is highlighted.</p>

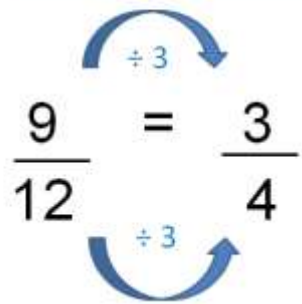
Fractions, decimal fractions and percentages

		
Improper fraction	$\frac{8}{5}$ $\frac{16}{6}$ $\frac{25}{13}$	A fraction where the numerator (the top number) is greater than the denominator (the bottom number).
Mixed number	$2 \frac{3}{4}$ $5 \frac{1}{2}$	A number which has a whole number and a fraction combined.
Numerator		The top number in a fraction, e.g. in ' $\frac{1}{4}$ ', 1 is the numerator.
<u>Ordering fractions</u>		Ordering fractions by size/value. To do this, it can be helpful to find a common denominator in the fractions and convert them to have the same denominator. You can then compare the fractions and order them by size/value.
Percentage		Percent means parts per 100. The symbol used is % Example: 25% means 25 per 100 (25% of this box is green).

Fractions, decimal fractions and percentages

<p>Proper fraction</p>		<p>A fraction where the numerator (the top number) is less than the denominator (the bottom number) e.g. $\frac{1}{2}$ is a proper fraction.</p>
<p><u>Proportion</u></p>	<div style="text-align: center;">  <p>$\frac{1}{3}$ $\frac{2}{6}$</p> <p>These pictures and fractions are in proportion, as the numerator (top number) increases by the same proportion (multiplying by 2) and the denominator (bottom number) increases by the same proportion (multiplying by 2).</p>  <p>2cm 5cm 6cm 15cm</p> <p>These rectangles are in proportion, as the height increases by the same proportion (multiplying by 3) and the length increases by the same proportion (multiplying by 3).</p> </div>	<p>‘In proportion’ means that two ratios or fractions are equal. <i>E.g. $\frac{1}{3} = \frac{2}{6}$ are in proportion</i> – they are ‘proportionate’ – equal to the same amount.</p> <p>Proportion also means two values are proportionate when a change in one is always accompanied by a change in the other. As one quantity increases or decreases another quantity increases or decreases by the same proportion.</p> <p>Real life situations where proportion is important could be; mixing cement, preparing hair dye, cooking/baking.</p>
<p>Ratio</p>		<p>A ratio shows the relative sizes of two or more values. Ratios can be shown in different ways. Using the ":", or as a single number by dividing one value by the total.</p> <p><i>E.g. if there is 1 boy and 3 girls you could write the ratio as:</i></p>

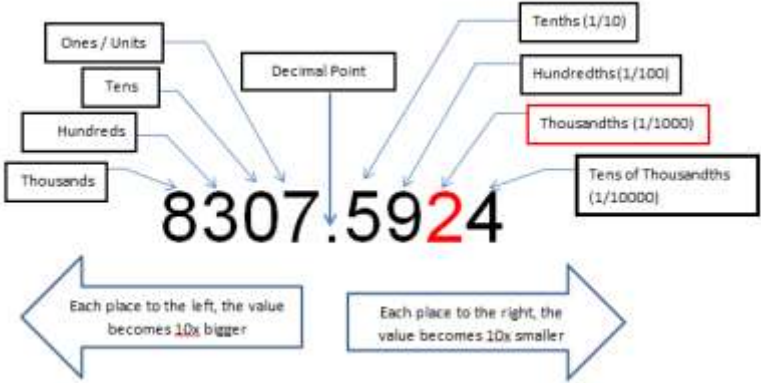
Fractions, decimal fractions and percentages

		<p>1:3 (for every one boy there are 3 girls)</p> <p>1/4 are boys and 3/4 are girls</p> <p>0.25 are boys (by dividing 1 by 4), 0.75 are girls</p> <p>25% are boys (0.25 as a percentage), 75% are girls</p>
Remainder		The amount “left over” after completing a calculation, e.g. 23 divided by 5 equally would be 4 remainder 3.
<u>Simplify a fraction</u> <u>/ Reduce a fraction</u>	<p>Simplify the fraction $\frac{9}{12}$</p> <p>Find the highest number that divides exactly in to both the numerator (9) and the denominator (12). This is the highest common factor.</p> <p>In this case, the highest common factor is 3.</p> <p>Divide both the numerator (top number) and the denominator (bottom number) by 3.</p> 	<p>Simplifying (or reducing) fractions means to make the fraction as simple as possible, ie. down to the lowest possible denominator.</p> <p>To simplify a fraction, divide the top and bottom by the highest number that can divide into both numbers exactly (highest common factor).</p>

Fractions, decimal fractions and percentages

<p>Tens of thousandths</p>	<p>Diagram illustrating the place value of the digit 4 in the number 8307.5924. The digit 4 is highlighted in red. Labels indicate the place value of each digit: Ones/Units, Tens, Hundreds, Thousands, Decimal Point, Tenths (1/10), Hundredths (1/100), Thousandths (1/1000), and Tens of Thousandths (1/10000). Arrows indicate that each place to the left of the decimal point becomes 10x bigger, and each place to the right becomes 10x smaller.</p>	<p>1 part of 10 000 equal parts, e.g. 1/10 000, 0.0001.</p>
<p>Tenths</p>	<p>Diagram illustrating the place value of the digit 5 in the number 8307.5924. The digit 5 is highlighted in red. Labels indicate the place value of each digit: Ones/Units, Tens, Hundreds, Thousands, Decimal Point, Tenths (1/10), Hundredths (1/100), Thousandths (1/1000), and Tens of Thousandths (1/10000). Arrows indicate that each place to the left of the decimal point becomes 10x bigger, and each place to the right becomes 10x smaller.</p> <p>Below the diagram is a row of 10 boxes, with the first box highlighted in yellow.</p>	<p>1 part of 10 equal parts, e.g. 1/10, 0.1. A tenth of these 100 blocks is highlighted.</p>

Fractions, decimal fractions and percentages

<p>Thousandths</p>	 <p>The diagram shows the number 8307.5924 with arrows pointing to boxes for each place value:</p> <ul style="list-style-type: none"> Thousands Hundreds Tens Ones / Units Decimal Point Tenths (1/10) Hundredths (1/100) Thousandths (1/1000) - highlighted in red Tens of Thousandths (1/10000) <p>Below the number, two arrows indicate the relationship between adjacent places:</p> <ul style="list-style-type: none"> Left arrow: Each place to the left, the value becomes 10x bigger Right arrow: Each place to the right, the value becomes 10x smaller 	<p>1 part of 1000 equal parts, e.g. 1/1000, 0.001.</p>
<p>Unit fraction</p>		<p>A fraction where the top number (the numerator) is 1. E.g. $\frac{1}{4}$ is a unit fraction.</p>
<p>Vulgar fraction</p>		<p>A fraction expressed only by a numerator and denominator, not decimally, e.g. '$\frac{1}{2}$'</p> <p>Can also be known as a 'common fraction'.</p>