

## PROGRESSION IN THE TEACHING OF FRACTIONS, DECIMALS AND PERCENTAGES

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#### Year 6 Objectives

- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
- Compare and order fractions, including fractions  $> 1$ .
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
- Multiply simple pairs of proper fractions, writing the answer in its simplest form [e.g.  $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ].
- Divide proper fractions by whole numbers [e.g.  $\frac{1}{3}$  divided by 2 =  $\frac{1}{6}$ ].
- Associate a fraction with division and calculate decimal fraction equivalents [e.g. 0.375] for a simple fraction [e.g.  $\frac{3}{8}$ ].
- 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
- multiply one-digit numbers with up to two decimal places by whole numbers
- use written division methods in cases where the answer has up to two decimal places
- solve problems which require answers to be rounded to specified degrees of accuracy
- recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

<p style="text-align: center;"><b>Part of a whole</b></p> <p style="text-align: center;">(item or quantity or set of items)</p>	<p style="text-align: center;"><b>Result of division</b></p> <p style="text-align: center;">(including when the numerator is smaller than the denominator)</p>	<p style="text-align: center;"><b>Fraction of a number</b></p>	<p style="text-align: center;"><b>Ratio</b></p> <p style="text-align: center;">(one object as a fraction of another)</p>
<p>• Explore simplifying fractions first with a rectangular model and then using common factors.</p> <div style="text-align: center; border: 1px solid red; padding: 5px; width: fit-content; margin: 10px auto;"> <math display="block">\frac{3}{9} = \frac{2}{6} = \frac{1}{3}</math> </div> <p>• Explore equivalent fractions first with a rectangular model and then using common multiples to express fractions with the same denominators.</p> <p>• Compare and order fractions using</p>	<p>• Change any fraction to a decimal by division.</p> <p>• Interpret whether to record a remainder as a fraction according to the context of the problem.</p> <p>• Solve problems involving fractions of amounts:</p> <ul style="list-style-type: none"> <li>○ What fraction of 2m is 64cm?</li> <li>○ What fraction of 1km is 253m?</li> <li>○ What fraction of 1 year is</li> </ul>	<p>• Place any fractions on a number line and use this to compare and order fractions, including beyond 1.</p> <div style="text-align: center; margin: 10px 0;"> </div> <p>• Answer questions and solve problems involving fractions as numbers such as:</p> <ul style="list-style-type: none"> <li>○ What number is half way between <math>5\frac{1}{2}</math> and <math>5\frac{3}{4}</math>?</li> </ul> <p>• Count in fractions and decimals forwards and backwards including across zero.</p> <p>• Recall equivalences between fractions, decimals and</p>	<p>• Simple scales in geography and scaling shapes</p> <p>• Solve problems including unequal sharing and grouping in ratio, such as:</p> <ul style="list-style-type: none"> <li>○ For every egg you need three spoonfuls of flour, how many eggs will be needed for 21 spoonfuls of flour?</li> <li>○ <math>\frac{3}{5}</math> of the class are girls. If there are 10 boys, how many girls are there?</li> <li>○ An agent's fee for selling a</li> </ul>

<p>equivalence including fractions above 1.</p> <ul style="list-style-type: none"> <li>• Add and subtract fractions with different denominators and mixed numbers using equivalence.</li> </ul> <p>• Explore multiplying pairs of fractions with a rectangular model and then writing the answer in its simplest form.</p> <p><math>1/3 \times 1/2 = 1/6</math></p> <ul style="list-style-type: none"> <li>• Divide fractions by whole numbers using a rectangular model.</li> </ul> <p><math>1/3 \div 2 = 1/6</math></p> <ul style="list-style-type: none"> <li>• Understand and use the link between multiplying by a fraction and dividing a fraction by a whole number:</li> </ul> <ul style="list-style-type: none"> <li>• Solve problems such as: <ul style="list-style-type: none"> <li>○ Amy scored 60 out of 80. Kim scored 148 out of 200. Who did better: Amy or Kim?</li> </ul> </li> </ul>	<p>a week?</p> <ul style="list-style-type: none"> <li>• Solve problems including working backwards from knowing a fraction of an amount to calculating the whole amount, such as: <ul style="list-style-type: none"> <li>○ <math>1/4 = 36\text{cm}</math>, what is whole length?</li> </ul> </li> </ul>	<p>percentages:</p> <p>e.g. <math>1/100 = 0.01 = 1\%</math>; <math>1/2 = 0.5 = 50\%</math>; <math>1/4 = 0.25 = 25\%</math>; <math>3/4 = 0.75 = 75\%</math>; <math>1/10 = 0.1 = 10\%</math> etc.</p>	<p>house is <math>1/20</math>. Calculate the fee for selling a house for £80,000?</p> <ul style="list-style-type: none"> <li>• Use the bar model to support the solving of problems <ul style="list-style-type: none"> <li>○ In a class there are 18 boys. <math>3/5</math> of the class are boys. How many children are in the class?</li> </ul> </li> <li>• Use ratio notation to solve problems, such as: <ul style="list-style-type: none"> <li>○ Dee mixes 1 tin of red paint with 2 tins of white. She needs 9 tins of paint altogether. How many tins of white paint does she need?</li> <li>○ Of the 96 children in Y6, <math>1/4</math> have no pets. 45 children have a dog, 21 children have a cat. How many Y6 children have other kinds of pets?</li> </ul> </li> </ul>
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