

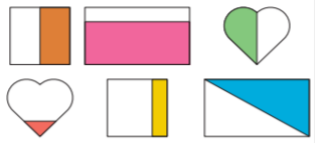

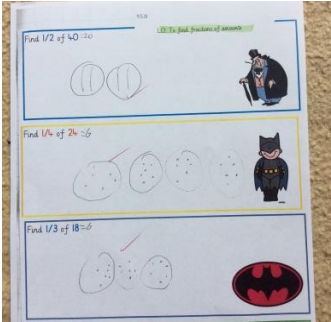

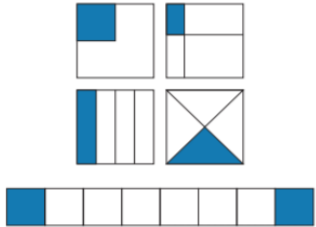


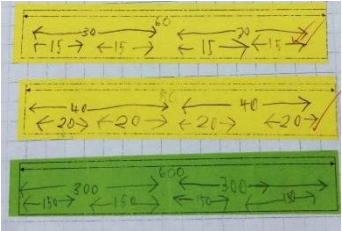
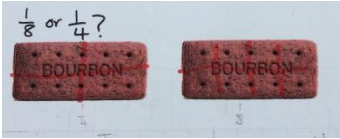
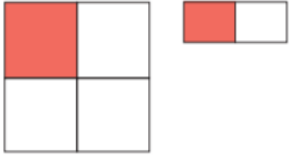


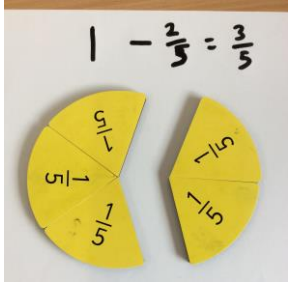
St Columba's Catholic Primary School

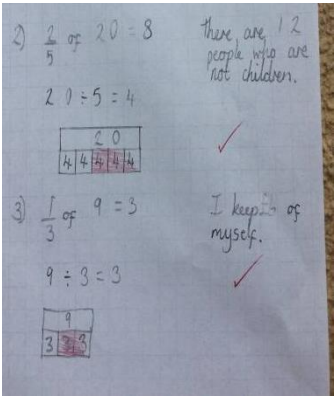



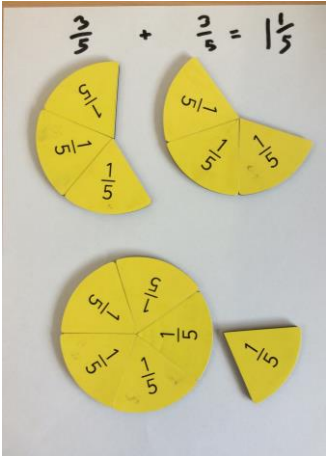
Whole School Mathematics

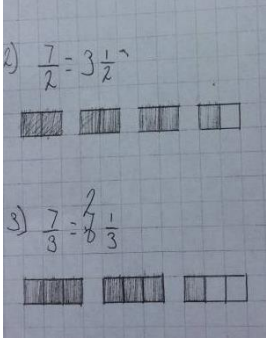
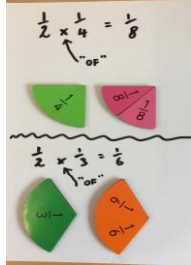
Teaching Fractions




Year group	Priorities (fractions)	Practical activities to reinforce mental images	Decimals (Y4, 5 & 6) and Percentages (Y5 & 6)	Questions to promote reasoning	Arithmetic with fractions
Year 1	<p>Recognise, find and name a half</p> <p>Then...</p> <p>Recognise, find, name <math>\frac{1}{4}</math> as four equal parts</p>	<p>Colour half of each whole shape (but look: no pre-drawn lines):</p>  <p>Find half of: a lump of plasticene; a banana; a pack of post-it notes; a can of pop</p> <p>Show half of this group:</p>  <p>Four children share a bag of 12 marbles equally. Show how many marbles each child gets. What fraction of the bag of marbles does each child get?</p> <p>Show that <math>\frac{1}{4}</math> of 8 is smaller than <math>\frac{1}{4}</math> of 6</p>		<p>Which of these show half of each whole shape? Explain your reasoning.</p> <p><i>Children should talk about the two parts needing to be equal parts of the whole.</i></p>  <p>Half the children at a party are girls. How many children could be at the party? Give four different answers. Explain your reasoning.</p>  <p>What is half of this amount?</p>	

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Year 2	<p>Revise Y1 concepts then...</p> <p>Recognise, find, name and write fractions: <math>\frac{1}{2}</math> (find half and half again)</p> <p><math>\frac{2}{4}</math></p> <p><math>\frac{1}{3}</math></p> <p>Recognise equivalence of <math>\frac{1}{2} = \frac{2}{4}</math></p>	<p>Use fractions with: length shapes set of objects; quantities</p> <p>Use materials then move on to pictorial representations to show fractions – e.g. <math>\frac{1}{2}</math> of 24 = 6</p>  <p>Be able to prove that <math>\frac{2}{4} = \frac{1}{2}</math></p> <p>Count in fractions up to 10, starting from any number using pictures and equipment</p>		<p>Bob says that the shaded part of the whole square below does not show a half because there are three pieces, not two. Do you agree? Explain your reasoning</p>  <p>Sam bought a bag of 18 cherries. Sam ate 6 cherries. What fraction of the bag of cherries did Sam eat?</p> <p>Which of these diagrams have <math>\frac{1}{2}</math> of the whole shaded? Explain your reasoning.</p>  <p>Which is bigger <math>\frac{1}{2}</math> or <math>\frac{1}{3}</math>? Prove it Which is bigger: <math>\frac{1}{2}</math> of 4 or <math>\frac{1}{3}</math> of 6</p>	

Year group	Priorities (fractions)	Practical activities to reinforce mental images	Decimals (Y4, 5 & 6) and Percentages (Y5 & 6)	Questions to promote reasoning	Arithmetic with fractions
Year 3	<p>Revise <math>\square</math> (half it &amp; half it)</p>  <p><math>2/4</math> <math>\square</math> <math>1/3</math></p> <p>Introduce <math>2/3</math> Tenths Fifths</p> <p>Develop ideas of equivalent fractions with fifths &amp; tenths</p> <p>Introduce adding &amp; subtracting fractions within one whole</p> <p>Introduce comparing fractions</p>	<p>Count up &amp; down in thirds, quarters, fifths &amp; tenths with pictorial representations and equipment</p> <p>Use <b>bar models</b> to show (and recognise, find &amp; write) fractions of a discrete set of objects</p> <p>Show (and recognise, find &amp; write) fractions of lengths, weights, money, biscuits, cakes, e.g. "would you rather have <math>1/4</math> or <math>1/8</math> of this?"</p>  <p>Prove, using diagrams, pictures &amp; equipment: <math>2/4 = \square</math> <math>1/5 = 2/10</math> <math>\square = 5/10</math></p> <p>Prove, using diagrams, pictures &amp; equipment: * <math>\square</math> is bigger than <math>1/5</math> of the same thing * <math>3/5</math> bigger than <math>2/5</math> of the same thing</p>	<p>Count up &amp; down in tenths with pictorial representations and equipment (without using the term decimals or decimal notation)</p>	<p>Bob says the diagrams below show that <math>\square &gt; \square</math>. Do you agree? Explain why.</p>  <p>This is <math>2/5</math> of a bag of marbles. How many marbles are in a full bag?</p>  <p>What fraction of the square is shaded? Explain your reasoning.</p>  <p>"I've got <math>\square</math> left and that's 3, how many did I start with?"</p> <p>"The answer to my fraction problem is 8. What could the word problem be?"</p>	<p>Use equipment and diagrams to support calculations like these:</p> <p><math>2/5 + 2/5</math> <math>2/10 + 3/10</math> I subtract <math>2/5</math></p>  <p>I subtract <math>\square</math> I subtract <math>3/10</math></p>

Year group	Priorities (fractions)	Practical activities to reinforce mental images	Decimals (Y4, 5 & 6) and Percentages (Y5 & 6)	Questions to promote reasoning	Arithmetic with fractions
Year 4	<p>Revise Y3 concepts of quarters, thirds, fifths, tenths</p> <p>Introduce: Sixths Eighths Hundredths (only when pupils' understanding of tenths is secure)</p> <p>Teach <b>fraction families</b> of common equivalent fractions</p> <p>Develop ideas of finding fractions of amounts □ of 2/5 of</p> <p>Investigate dividing by 10</p>	<p>Show, using diagrams &amp; equipment, (e.g. <b>fraction walls</b>) families of common equivalent fractions: □ = 2/4 = 4/8 □ = 6/8 1/3 = 2/6 2/3 = 4/6</p> <p>Use equipment &amp; pictorial representations (<b>bar models</b>) to calculate fractions of numbers: □ of, 2/3 of moving on to 2/5 of, 5/6 of, 3/8 of, 7/10 of</p>  <p>Use number lines to practise counting with fractions both forwards and backwards.</p>	<p>Introduce decimal equivalents of tenths (and hundredths if appropriate) e.g.: 7/10 = 0.7  7/100 = 0.07</p> <p>Recognise, and show using pictorial representations &amp; equipment, □ = 5/10 = 50/100 = 0.50</p> <p>Use pictorial representations &amp; equipment to round decimals with 1 decimal place to the nearest whole number</p> <p>Use number lines to practise counting with decimals both forwards and backwards.</p> <p>Use equipment to find the effect of dividing a one- or two-digit number by 10; identify the value of the digits in the answer as ones &amp; tenths</p>	<p>Put these fractions on the number line: 2/3, □, □, 3/6, 3/8</p>  <p>What's the same? What's different?</p>  <p>True or false? 1/5 + 2/5 = 3/5 1/5 + 2/5 = 3/10 1/5 + 2/5 = 6/10 Explain your reasoning</p> <p>If the picture represents 1/5 of a rectangle, draw a picture of the whole rectangle. Can you draw it in two different ways?</p>  <p>Which is the odd one out &amp; why? 1/3, 1/6, 3/9</p> <p>Find 3 different ways to show 1/3</p> <p>Which is the odd one out: 4/6 6/8 or 9/10</p>	<p>Use equipment and diagrams to support calculations like these:  3/5 + 3/5</p>  <p>2 subtract 3/8</p> <p>9/10 - 4/10</p>



Year group	Priorities (fractions)	Practical activities to reinforce mental images	Decimals (Y4, 5 & 6) and Percentages (Y5 & 6)	Questions to promote reasoning	Arithmetic with fractions
Year 5	<p>Revise Y3 &amp; 4 concepts</p> <p>Compare &amp; order fractions whose denominators are all multiples of the same number</p> <p>Equivalent fractions of 50/100 25/100 75/100 10/100</p> <p>Convert between improper fractions &amp; mixed number fractions</p> <p>Add &amp; subtract fractions whose denominators are multiples of the same number</p> <p>Introduce multiplication of fractions</p>	<p>Prove, using equipment &amp; pictorial representations: <math>\square = 3/6</math> <math>3/8 &gt; 1/4</math> <math>7/10 &lt; 4/5</math></p> <p>Prove, using equipment &amp; pictorial representations, equivalent fractions: <math>50/100 = 5/10 = 1/2</math> <math>25/100 = 1/4</math> <math>75/100 = 3/4</math> <math>10/100 = 1/10</math></p> <p>Use equipment &amp; pictorial representations to convert mixed-number fractions to improper</p>  <p>fractions &amp; vice-versa</p> <p>Use number lines to practise counting forwards and backwards in fractions, including bridging 0.</p>	<p>Revise decimal notation of hundredths; read and write decimal numbers as fractions, e.g. <math>0.71 = 71/100</math></p> <p>Use money, other equipment &amp; pictorial representations to round decimals with 2 decimal places to the nearest whole number.</p> <p>Order and compare numbers with 1 &amp; 2 decimal places</p> <p>Introduce the per cent symbol (%); understand that per cent relates to 'number of parts per 100'; write percentages as hundredths and decimals <math>71\% = 71/100 = 0.71</math></p> <p>Recognise, and show using pictorial representations &amp; equipment, <math>\square = 50/100 = 0.50 = 50\%</math> <math>\square = 25/100 = 0.25 = 25\%</math> <math>\square = 75/100 = 0.75 = 75\%</math> <math>1/10 = 10/100 = 0.1 = 10\%</math></p>	<p>Bob says <math>3/8 &gt; \square</math> because <math>8 &gt; 4</math>. Do you agree? Explain your reasoning.</p> <p>Bob wanted to buy a coat that cost £80. He saw the coat on sale in one shop at <math>1/5</math> off. He saw the same coat on sale in another shop at 25% off. Which shop has the coat at a cheaper price? Explain your reasoning.</p> <p>Choose numbers for each numerator to make this number sentence true.</p> $\frac{\square}{15} > \frac{\square}{10}$ <p>"Would you rather...?" questions when finding fractions of amounts</p> <p>Put these fractions in order: <math>2/3</math> <math>\square</math> <math>5/6</math></p>	<p>Use equipment and diagrams to support calculations like these:</p> $2/5 + 4/5 = 6/5 = 1 \text{ and } 1/5$ $2/3 + 2/3 + 2/3$ <p>1 and <math>1/8</math> subtract <math>3/8</math></p> <p><math>\square \times \square</math></p> <p><math>\square \times 1/3</math></p> <p>(x says "of")</p>  <p>Use equipment and diagrams to support calculations like these before moving on to mentally adding and subtracting tenths, and one-digit whole numbers and tenths.</p>

Year group	Priorities	Practical activities to reinforce mental images	Decimals (Y4, 5 & 6) and Percentages (Y5 & 6)	Questions to promote reasoning	Arithmetic with fractions
Year 6	<p>Revise <math>\times 3, 4</math> &amp; <math>\div 5</math> concepts</p> <p>Simplify fractions using common factors</p> <p>Use equivalent fractions to order &amp; compare fractions</p> <p>Introduce thousandths</p> <p>Introduce division of fractions</p>	<p>Prove, using equipment &amp; pictorial representations, equivalent and simplified fractions</p>	<p>Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places; identify the value of the digits in the answer in correct place value terms</p> <p>Multiply one-digit numbers with up to 2 decimal places by whole numbers</p> <p>Use written division methods in cases where the answer has up to 2 decimal places</p> <p>Round to the nearest whole number and to one decimal place</p> <p>Develop fluency of recall (and use) equivalences between simple fractions, decimals and percentages</p>	<p>Which is the odd one out?</p> <p><math>2/5</math>, <math>0.4</math>, <math>4/10</math>, <math>3/6</math>, <math>6/15</math></p> <p>Explain your choice.</p> <p>Bob added two fractions together and got <math>7/8</math> as the answer. Write down two fractions that Sam could have added (but only one of them can be <math>1/8</math>)</p> <p>Tom subtracted a smaller fraction from a larger one and got <math>1/5</math> as the answer. Write down two fractions that Tom could have subtracted (one of them was greater than 1)</p> <p>Tom and Sam shared equally <math>1/3</math> of a chocolate bar. What fraction of the chocolate bar did each child get?</p> <p><math>1/4</math> of <math>x = 9</math>; find <math>5/6</math> of <math>x</math></p>	<p>Use equipment and diagrams to support calculations like these:</p> <p><math>\square + 1/6</math>  <math>\square - 3/8</math>  <math>4/5 + 3/10</math>  <math>1 \text{ and } 1/5 - 3/10</math>  <math>\square \times \square = 1/8</math>  <math>4/5 \div 2</math>  <math>1/3 \div 2 = 1/6</math></p>   



1518

10. To find fractions of amounts

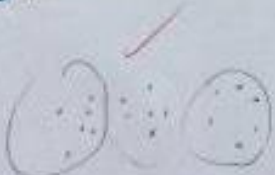

Find  $\frac{1}{2}$  of 40 = 20

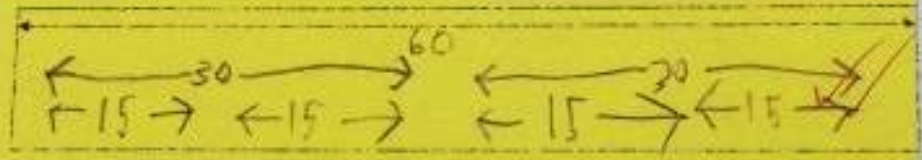
Find  $\frac{1}{4}$  of 24 = 6


Find  $\frac{1}{3}$  of 18 = 6


60




80



600



$\frac{1}{8}$  or  $\frac{1}{4}$ ?



$\frac{1}{8}$

$\frac{1}{4}$

2)  $\frac{2}{5}$  of 20 = 8

there are 12 people who are not children.

$20 \div 5 = 4$

20				
4	4	4	4	4

3)  $\frac{1}{3}$  of 9 = 3

I keep 3 of myself.

$9 \div 3 = 3$

9	
3	3