

# Fractions

**Foundation Stage Objectives:**  
See Division section of policy.

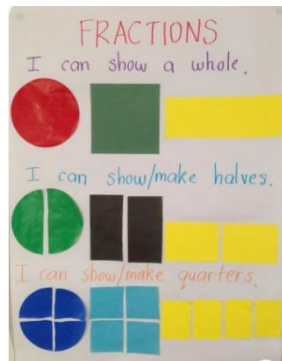
**Year 1 Objectives:**

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity.
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

Concrete	Pictorial	Abstract
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Pupils will use practical objects, including within their role play and outside areas to find  $\frac{1}{2}$  and  $\frac{1}{4}$  of different amounts and shapes.

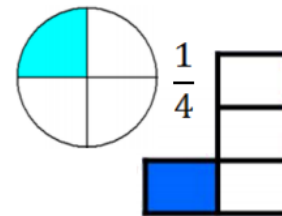
Bar Model using strips of paper, I find  $\frac{1}{2}$  and  $\frac{1}{4}$  by folding and cutting different sizes and shapes in order support their understanding fractions.



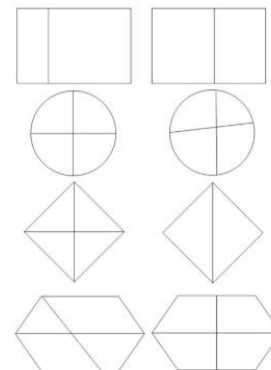
to  
of

Pictorial

E.g. find half ( $\frac{1}{2}$ ) of the items on each picture or shape. Do the same for a quarter ( $\frac{1}{4}$ ).



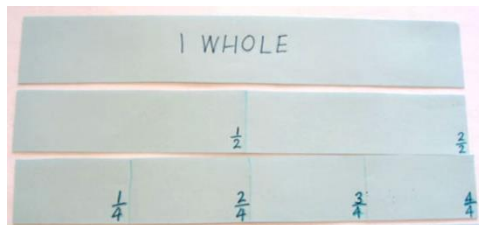
Repeat with shapes: Which have been cut exactly into quarters?



Abstract

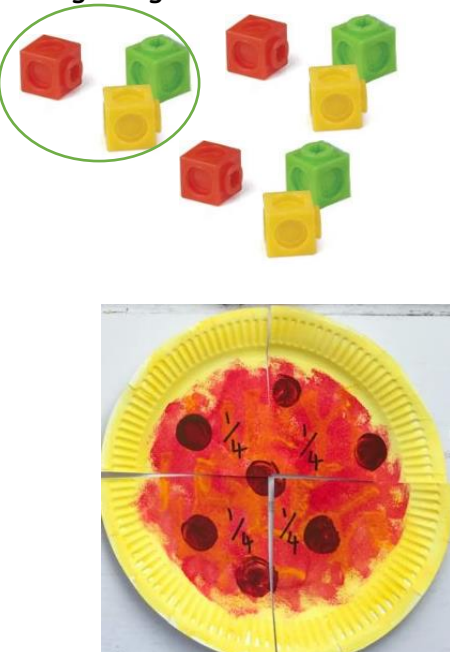

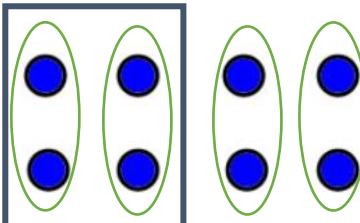


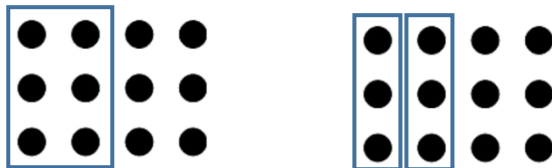
Half of 10 = 5  
 $\frac{1}{2}$  of 6 = 3

A quarter of 20 =  
 $\frac{1}{4}$  of 8 = 2



**Year 2 Objectives:**

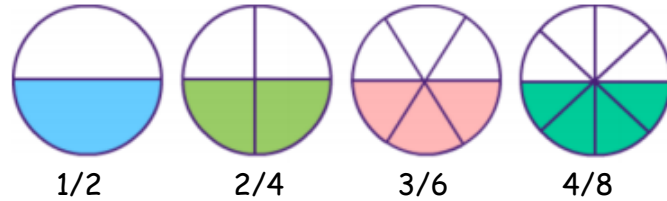
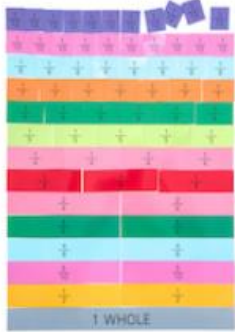
- Recognise, find, name and write fractions  $1/3$ ,  $1/4$ ,  $2/4$  and  $3/4$  of a length, shape, set of objects or quantity
- Write simple fractions for example,  $1/2$  of  $6 = 3$  and recognise the equivalence of  $2/4$  and  $1/2$ .

Concrete	Pictorial	Abstract
<p>Recognising <math>1/3</math>, <math>1/4</math>, <math>2/4</math> and <math>3/4</math></p> 	<p>Find different ways of finding fractions of shapes</p>  <p><math>3/4</math> of a rectangle, for example.</p> <p><math>2/4</math> of a quantity. <math>2/4</math> of <math>8 = 4</math></p> 	<p><math>1/3</math> of <math>9 = 3</math></p> <p><math>2/4</math> of <math>8 = 4</math></p> <p><math>3/4</math> of <math>12 = 9</math></p>
<p>Recognise equivalence. <math>1/2 = 2/4</math></p> 	 <p><math>2/4</math> of a pie = <math>1/2</math> of a pie</p> <p><math>1/2</math> of <math>12</math> = <math>2/4</math> of <math>12</math></p> 	<p><math>1/2</math> of <math>12 = 6</math></p> <p><math>2/4</math> of <math>12 = 6</math></p>

**Year 3 Objectives:**

- Recognise and show, using diagrams, equivalent fractions with small denominators
- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
- Add and subtract fractions with the same denominator within one whole [for example,  $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$  ]
- Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number

Recognise and show equivalent fractions using fraction bars/strips, for example



David says two sixths is the same as one third. Is he correct? How do you know?

Fractions of a discrete set of objects.

Unit fraction  $\frac{1}{8}$



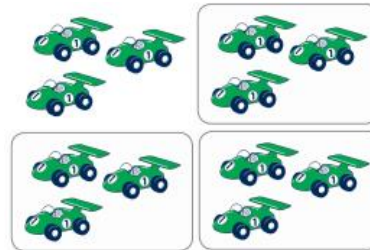
Non-unit fraction  $\frac{3}{7}$



$\frac{1}{8}$



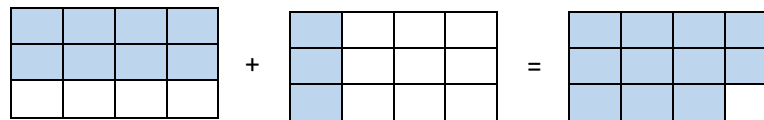
$\frac{3}{4}$



$\frac{1}{5}$  of 15 sweets = 3  
( $15 \div 5 = 3$ )

$\frac{2}{5}$  of 15 sweets = 6  
( $15 \div 5 = 3$  and  $3 \times 2 = 6$ )

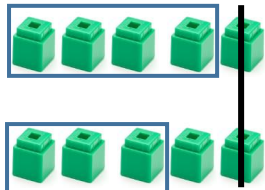
Add and subtract fractions with the same denominator within 1 whole.



$$8/12 + 3/12 = 11/12$$

Comparing the two fractions and finding the difference/

$$4/5 - 3/5 = 1/5$$



$$4/5 - 3/5 = 1/5$$

Solve problems:

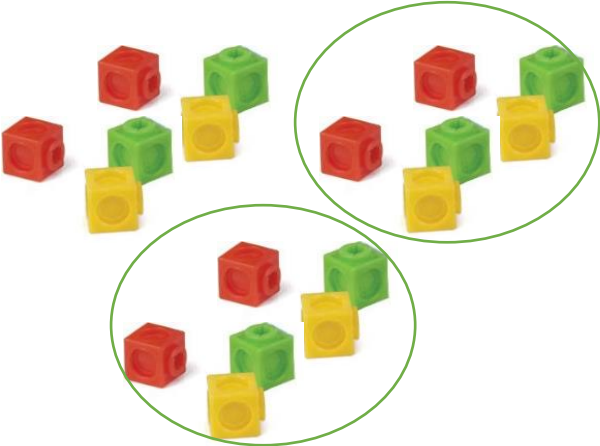
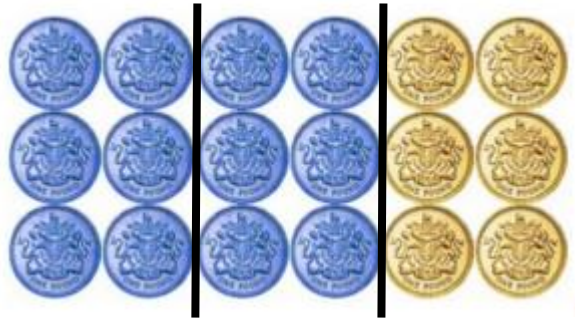
David spent 1/4 of his money on a book. The book cost £10. How much money did he start off with?

$$1/4 = £10$$

$$4 \times £10 = £40$$


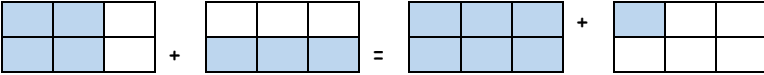

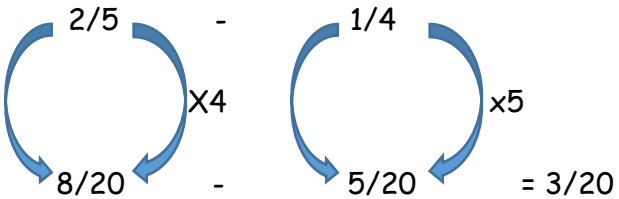

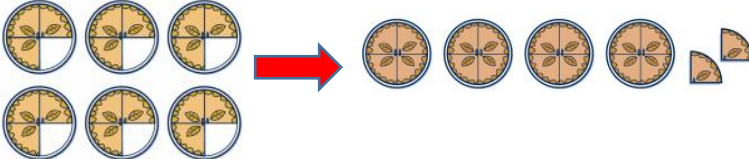
Total Money?

1/4	1/4	1/4	1/4
£10	£10	£10	£10

Concrete	Pictorial	Abstract
<p><b>Year 4 Objectives:</b></p> <ul style="list-style-type: none"> <li>• Add and subtract fractions with the same denominator</li> <li>• Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number</li> </ul>		
<p>Adding and subtracting fractions as above</p> <p>Solve problems including non-unit fractions Use counters/play money to find <math>\frac{2}{3}</math>.</p>  <p>A collection of 12 colorful blocks (red, green, yellow) is shown. Two groups of 8 blocks each are circled in green, representing <math>\frac{2}{3}</math> of the total.</p>	<p><math>\frac{2}{3}</math> of £18 =</p>  <p>A grid of 18 coins is shown, arranged in 3 rows and 6 columns. The first two columns (12 coins) are blue, and the last two columns (6 coins) are gold. Two vertical black lines separate the blue coins from the gold coins, representing <math>\frac{2}{3}</math> of the total.</p>	<p><math>\frac{3}{8} + \frac{5}{8} = \frac{8}{8}</math> (same as 1 whole)</p> <p><math>\frac{6}{7} - \frac{4}{7} = \frac{2}{7}</math></p> <p><math>\frac{2}{3}</math> of £18 =  <math>£18 \div 3 = £6</math>  <math>£6 \times 2 = £12</math></p>

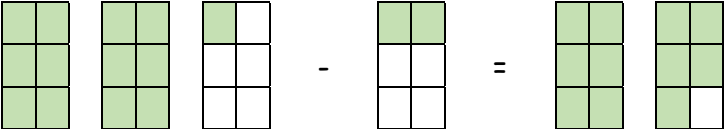
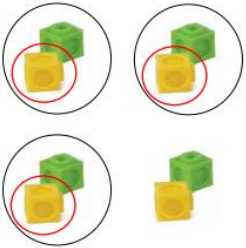
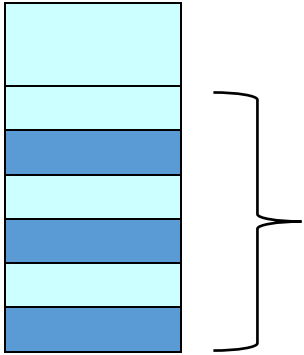
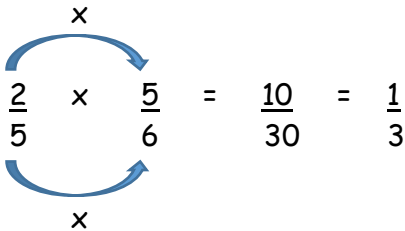
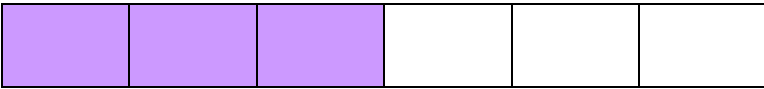
**Year 5 Objectives:**

- Add and subtract fractions with the same denominator and denominators that are multiples of the same number
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements  $> 1$  as a mixed number [for example,  $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$ ]
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

Concrete	Pictorial	Abstract
<p>Add and subtract fractions with same denominator and denominators that are multiples of the same number, and recognise mixed numbers and improper fractions.</p> <p><math>2/3 + 2/3 = 4/3 = 1 \frac{1}{3}</math></p> 	 <p><math>4/6 + 3/6 = 1 \text{ whole} + 1/6</math> (7/6)</p>  <p><math>2/5 - 1/4 =</math> <math>8/20 - 5/20 = 3/20</math></p>	<p><math>4/6 + 3/6 = 7/6 = 1 \frac{1}{6}</math></p> <p><math>1 \frac{1}{6} = 7/6</math> (because <math>1 = 6/6</math>)</p> <p><math>2/5 - 1/4 =</math></p> 
<p>Multiply proper fractions and mixed numbers by a whole number</p> <p><math>6 \times 3/4</math></p> 	<p><math>6 \times 3/4 = 4 \frac{2}{4}</math></p> 	<p><math>6 \times 3/4 = 18/4 = 4 \frac{2}{4}</math> or <math>4 \frac{1}{2}</math></p>

**Year 6 Objectives:**

- 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 [for example,  $1/4 \times 1/2 = 1/8$  ]
- Divide proper fractions by whole numbers [for example,  $1/3 \div 2 = 1/6$  ]

Concrete	Pictorial	Abstract
<p>Add and Subtract fractions - as year 5</p> <p>With mixed numbers</p>	<p><math>2 \frac{1}{6} - \frac{1}{3}</math></p>  <p><math>2 \frac{1}{6} - \frac{1}{3} = 1 \frac{5}{6}</math></p>	<p><math>2 \frac{1}{6} - \frac{1}{3}</math> (find the same denominator)</p> <p><math>2 \frac{1}{6} - \frac{2}{6}</math> ( change 1 whole into a fraction and add to the existng fraction)</p> <p><math>1 \frac{7}{6} - \frac{2}{6} = 1 \frac{5}{6}</math></p>
<p>Multiply simple pairs of proper fractions.</p> <p><math>1/2 \times 3/4 = 3/8</math></p> 	<p><math>1/2 \times 3/4</math></p>  <p>3/4 of which half is shaded</p>	<p><math>1/2 \times 3/4 = 3/8</math></p> <ol style="list-style-type: none"> <li>1. Multiply the numerator.</li> <li>2. Multiply the denominator.</li> <li>3. Simplify where possible.</li> </ol>  <p><math>\frac{2}{5} \times \frac{5}{6} = \frac{10}{30} = \frac{1}{3}</math></p>
<p>Divide proper fractions by whole numbers</p>	<p><math>1/2 \div 3 =</math></p> 	<p><math>1/2 \div 3 = 1/6</math></p>

