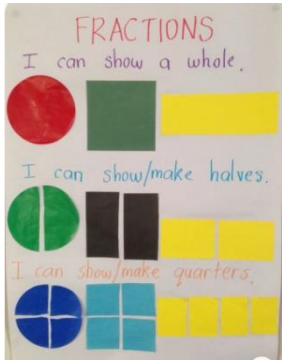
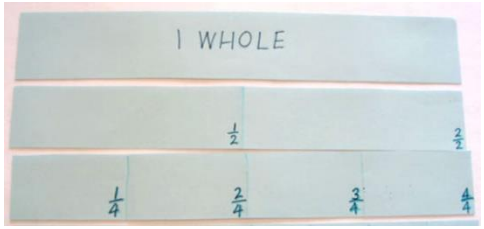
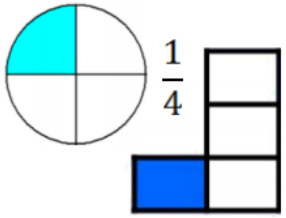
# Fractions

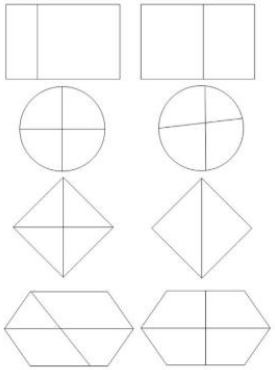
**Foundation Stage Objectives:**

- Solve practical problems involving sharing and halving. **See Division section of policy.**

**Year 1 Objectives:**

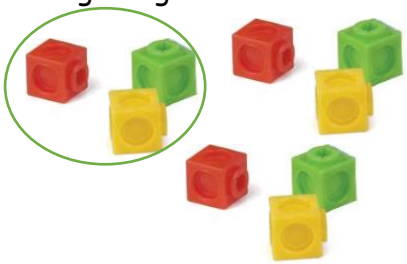
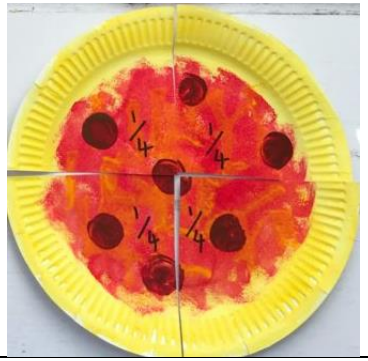
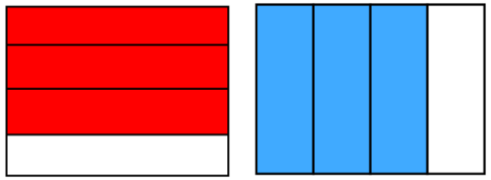
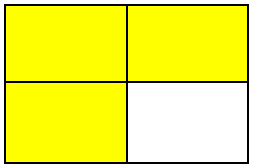
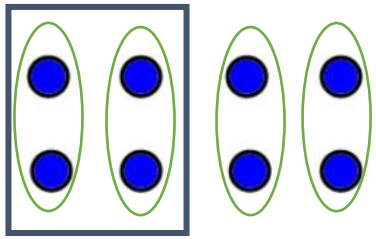
- Recognise, find and name a half as one of two equal parts of an object, shape or quantity.
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

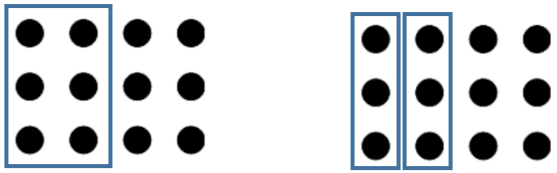
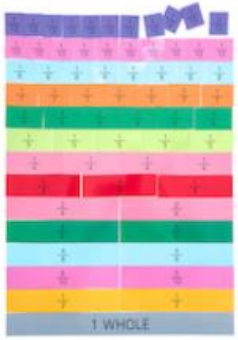
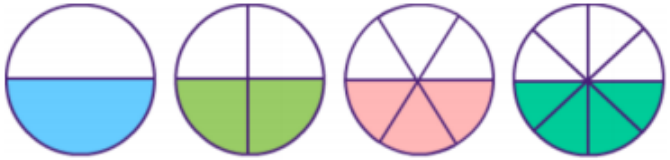
| Concrete | Pictorial | Abstract |
|---|---|---|
| Pupils will use practical objects, including within their role play and outside areas to find 1/2 and 1/4 of different amounts and shapes. | | |
| Bar Model using strips of paper, I find 1/2 and 1/4 by folding and cutting different sizes and shapes in order to support their understanding of fractions.     | E.g. find half ( $\frac{1}{2}$) of the items on each picture or shape. Do the same for a quarter (1/4).    | Half of 10 = 5<br>1/2 of 6 = 3<br><br>A quarter of 20 =<br>1/4 of 8 = 2 |

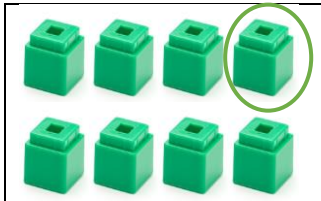
| | | |
|---|---|---|
| | Repeat with shapes: Which have been cut exactly into quarters?  | |

**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 |
|---|---|---|
| Recognising 1/3. 1/4 2/4 and 3/4   | Find different ways of finding fractions of shapes  3/4 of a rectangle, for example.  2/4 of a quantity. 2/4 of 8 = 4  | 1/3 of 9 = 3<br><br>2/4 of 8 = 4<br><br>3/4 of 12 = 9 |

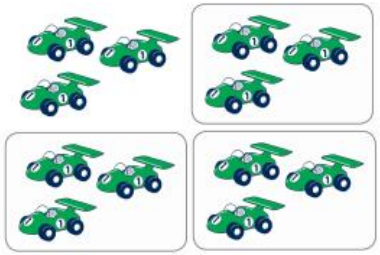
<table>
<tr>
<td>Recognise equivalence.<br>1/2 = 2/4<br><br>  </td>
<td>  <br>2/4 of a pie = 1/2 of a pie<br><br>1/2 of 12 = 2/4 of 12<br>  </td>
<td>1/2 of 12 = 6<br><br>2/4 of 12 = 6</td>
</tr>
<tr>
<td colspan="3">Year 3 Objectives:<br>• Recognise and show, using diagrams, equivalent fractions with small denominators<br>• Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators<br>• Add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7 ]<br>• 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</td>
</tr>
<tr>
<td>Recognise and show equivalent fractions using fraction bars/strips, for example<br>  <br></td>
<td>  <br>1/2 2/4 3/6 4/8</td>
<td>David says two sixths is the same as one third. Is he correct? How do you know?</td>
</tr>
<tr>
<td>Fractions of a discrete set of objects.<br><br>Unit fraction 1/8</td>
<td></td>
<td>1/5 of 15 sweets = 3<br>(15 ÷ 5 = 3)</td>
</tr>
</table>



Non-unit fraction 3/7

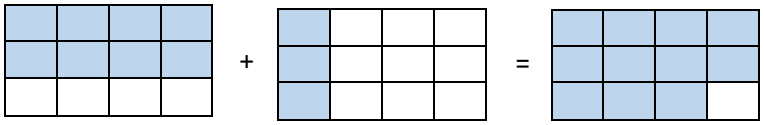
1/8

3/4



2/5 of 15 sweets = 6
(15 ÷ 5 = 3 and 3 x 2 = 6)

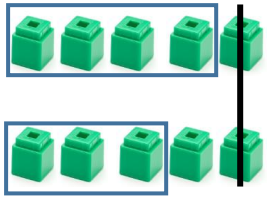
Add and subtract fractions with the same denominator within 1 whole.



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?

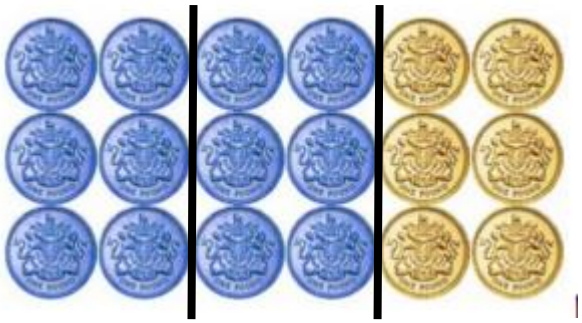
| Total Money? | | | |
|---|---|---|---|
| 1/4 | 1/4 | 1/4 | 1/4 |

1/4 = £10
4 x £10 = £40

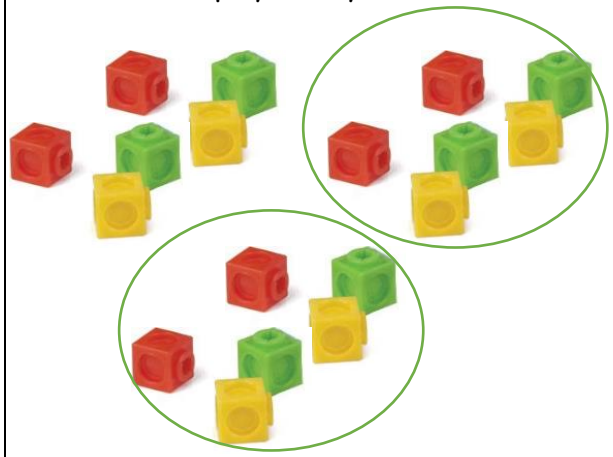
| | | |
|---|---|---|
| | £10 £10 £10 £10 | |
| Concrete | Pictorial | Abstract |

**Year 4 Objectives:**

- Add and subtract fractions with the same denominator
- 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

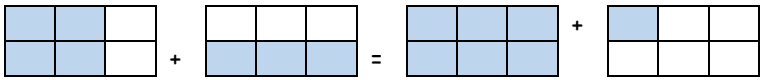
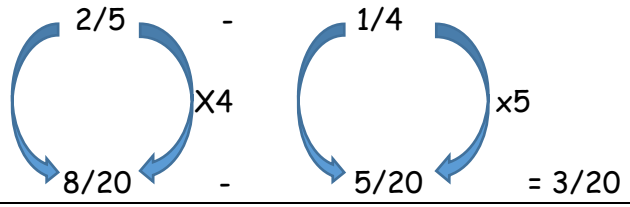
| Concrete | Pictorial | Abstract |
|---|---|---|
| Adding and subtracting fractions as above | | 3/8 + 5/8 = 8/8 (same as 1 whole)<br><br>6/7 – 4/7 = 2/7 |
| Solve problems including non-unit fractions | 2/3 of £18 =<br>  | 2/3 of £18 =<br>£18 ÷ 3 = £6<br>£6 x 2 = £12 |

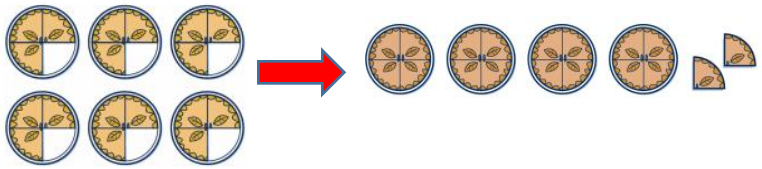
Use counters/play money to find 2/3.



**Year 5 Objectives:**

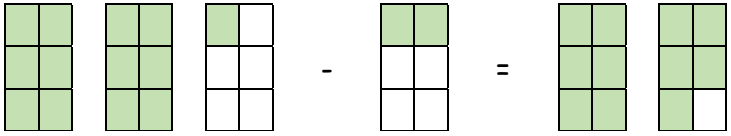
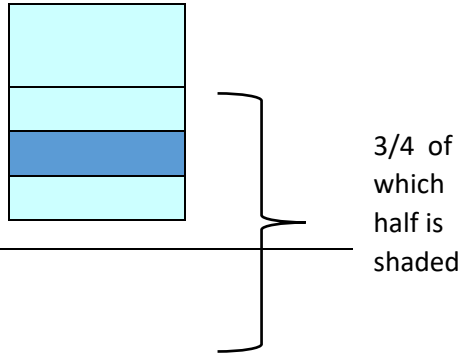
- Add and subtract fractions with the same denominator and denominators that are multiples of the same number
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5 ]
- Multiply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

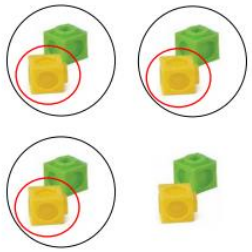
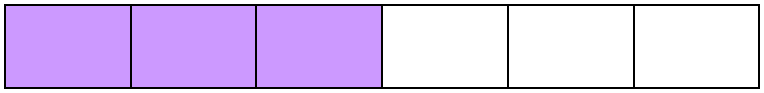
| Concrete | Pictorial | Abstract |
|---|---|---|
| Add and subtract fractions with same denominator and denominators that are multiples of the same number, and recognise mixed numbers and improper fractions.<br>2/3 + 2/3 = 4/3 = 1 1/3<br>  |  <br>4/6 + 3/6 = 1 whole + 1/6 (7/6)<br>  <br>2/5 - 1/4 =<br>8/20 - 5/20 = 3/20 | 4/6 + 3/6 = 7/6 = 1 1/6<br>1 1/6 = 7/6 (because 1 = 6/6)<br>2/5 - 1/4 =<br>  |

| | | |
|---|---|---|
| Multiply proper fractions and mixed numbers by a whole number<br>6 x 3/4<br>  | 6 x 3/4 = 4 2/4<br>  | 6 x 3/4 = 18/4 = 4 2/4 or 4 1/2 |

**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 × 1/2 = 1/8 ]
- Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6 ]

| Concrete | Pictorial | Abstract |
|---|---|---|
| Add and Subtract fractions – as year 5<br><br>With mixed numbers | 2 1/6 - 1/3<br>  <br>2 1/6 - 1/3 = 1 5/6 | 2 1/6 - 1/3 (find the same denominator)<br><br>2 1/6 - 2/6 ( change 1 whole into a fraction and add to the existnig fraction)<br><br>1 7/6 - 2/6 = 1 5/6 |
| Multiply simple pairs of proper fractions. | 1/2 x 3/4<br>  <br>3/4 of which half is shaded | 1/2 x 3/4 = 3/8<br><br>1. Multiply the numerator.<br>2. Multiply the denominator.<br>3. Simplify where possible.<br><br>x |

| | | |
|---|---|---|
| 1/2 x 3/4 = 3/8<br>  |  | $\frac{2}{5} \times \frac{5}{6} = \frac{10}{30} = \frac{1}{3}$<br>× |
| Divide proper fractions by whole numbers | 1/2 ÷ 3 =<br>  | 1/2 ÷ 3 = 1/6 |