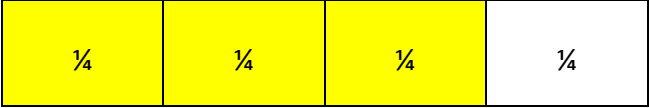
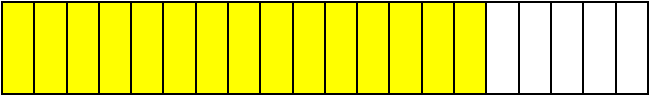
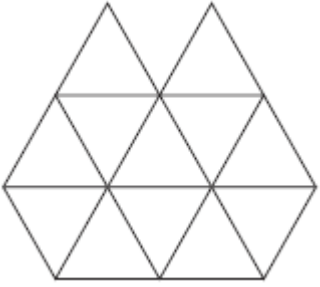


Fractions Policy

Fraction strips: Blank (bar) rectangles (on plain paper) and get used to dividing the bars into halves, thirds, quarters etc:

Shading fractions of shapes:

| Concrete | Pictorial | Abstract | | | | |
|---|---|-----------------|--|--|--|---|
| To calculate, concretely, how many parts to shade, use objects to share and find the fraction | <p>Shade $\frac{3}{4}$ of this shape</p>  <p>Shade $\frac{3}{4}$ of this shape:</p>  <p>Calculate $\frac{3}{4}$ of 20</p> <table border="1"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table> <p>so, shade 15 parts</p> <p>Shade $\frac{1}{4}$ of this shape:</p>  | | | | | <p>$20 \div 4 = 5$</p> <p>$5 \times 3 = 15$</p> <p>$12 \div 4 = 3$</p> <p>Shade 3 triangles</p> |
| | | | | | | |
| | | | | | | |

Fractions of amounts:

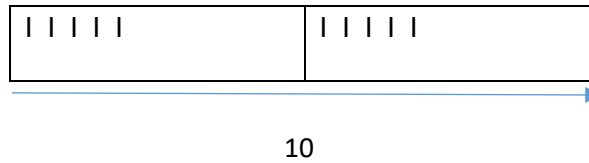
Concrete

To calculate fractions of amounts, concretely, use objects to share and find the fraction

Pictorial

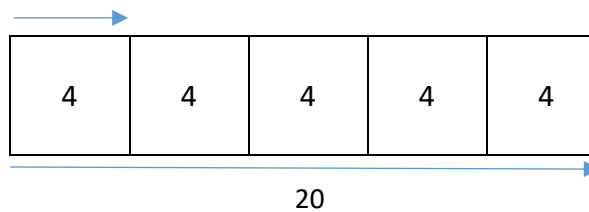
Calculate a fraction of a quantity by first drawing the fraction in the bar, showing the length of the bar to be the quantity and then calculating the length of the shaded part:

Calculate $\frac{1}{2}$ of 10:



Calculate $\frac{1}{5}$ of 20 = 4

?



Calculate $\frac{3}{5}$ of 20 = 12

?



Abstract

$$\frac{1}{2} \text{ of } 10 = 5$$

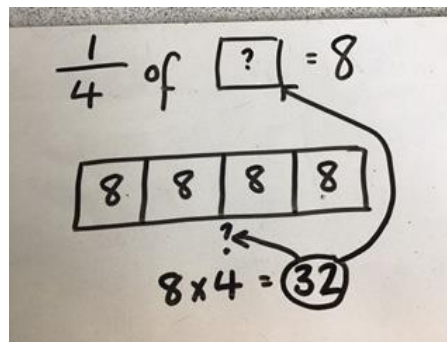
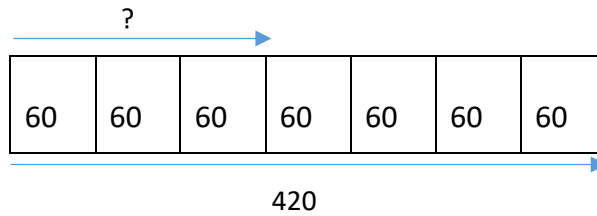
$$20 \div 5 = 4$$

$$20 \div 5 = 4$$

$$4 \times 3 = 12$$

$\frac{1}{4}$ of a number is 8. What is the number?

Calculate $\frac{3}{7}$ of 420 = 180



$$420 \div 7 = 60$$

$$60 \times 3 = 180$$

Once the pupils are calculating with larger numbers, they are likely to be able to work straight in the abstract context

'divide by denominator, multiply by numerator'

Use x facts and multiplication

$$8 \times 4 = 32 \quad \text{so.....}$$

$$\frac{1}{4} \text{ of } 32 = 8$$

Equivalent fractions

Concrete

Fraction strips: Blank (bar) rectangles (on plain paper) and get used to dividing the bars into halves, thirds, quarters etc to see equivalences

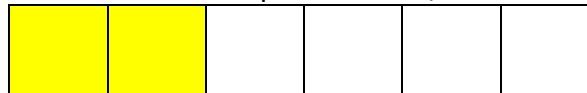
Pictorial

Which fraction is equivalent to $2/5$?



$$2/5 = 4/10$$

Which fraction is equivalent to $2/6$?

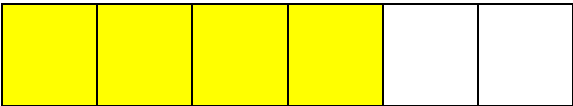

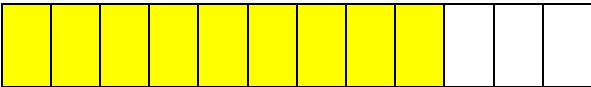



$$2/6 = 1/3$$

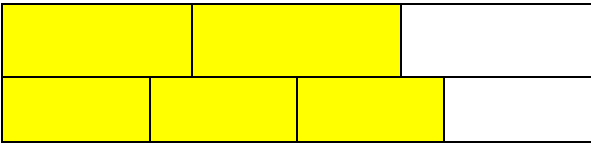
Abstract

Link equivalences to times tables knowledge


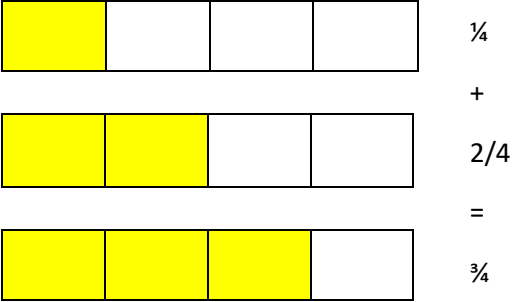
Simplifying fractions:

| Concrete | Pictorial | Abstract |
|-----------------|---|--|
| | <p>Give $4/6$ in its simplest form:</p>   <p>How can we remove some of the vertical lines to make fewer equal sized pieces?</p> <p>$4/6 = 2/3$</p> <p>Give $9/12$ in its simplest form:</p>   <p>$9/12 = 3/4$</p> | <p>Think of a common factor of both 9 and 12? 3 (the highest common factor)</p> <p>$9 \div 3 = 3$</p> <p>$12 \div 3 = 4$</p> <p>Link to times tables knowledge and common factors</p> |





Ordering fractions

| | | |
|--|--|---|
| <p>Concrete</p> <p>Fraction strips: Blank (bar) rectangles (on plain paper) and get used to dividing the bars into halves, thirds, quarters etc to compare size of fractions and order them</p> | <p>Pictorial</p> <p>Which is greater $\frac{2}{3}$ or $\frac{3}{4}$?</p>  | <p>Abstract</p> <p>Find a common denominator: (see equivalent fractions part of this policy)</p> <p>$\frac{2}{3} = \frac{8}{12}$ $\frac{3}{4} = \frac{9}{12}$</p> |
|--|--|---|

Adding fractions (same denominator)

| | | |
|--|--|--|
| <p>Concrete</p> <p>Use half, quarter cups/ thirds, fifths, sevenths cards to add concretely</p> | <p>Pictorial</p> <p>$\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$</p>  <p>OR</p>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Using this model will prepare pupils for working with fractions where the denominators are different</p> </div> | <p>Abstract</p> <p>$\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$</p> |
|--|--|--|

Adding fractions (with different denominators)

| Concrete | Pictorial | Abstract |
|--|--|---|
| Use half, quarter cups/ thirds, fifths, sevenths cards to add concretely | <p>$1/3 + 3/6 =$</p>  <p></p> <p>We need to turn the thirds into sixths (the common denominator)</p>  <p>2/6</p> <p>+</p>  <p>3/6</p> <p>= 5/6</p> <p>So, $1/3 + 2/6 = 5/6$</p> | <p>find the common denominator</p> <p>$1/3 + 2/4 =$</p> <p>The common denominator is 12</p> <p>$4/12 + 6/12 = 10/12$</p> <p>* this can be shown in a bar model too</p> |

Use the same process for subtraction with fractions

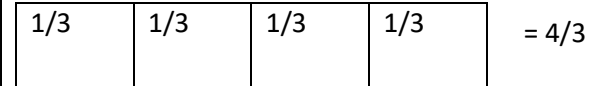
Multiplying fractions

Concrete

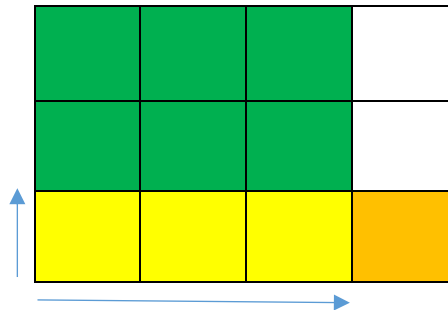
Use cups, cards

Pictorial

$$1/3 \times 4 =$$



$$1/3 \times 3/4 = 3/12$$



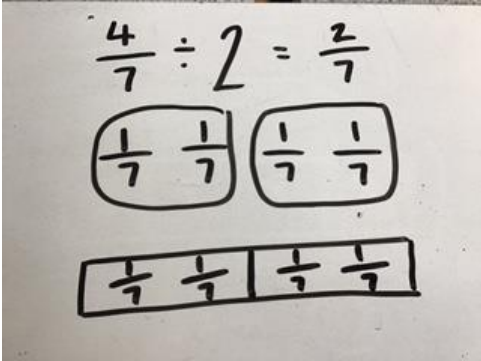
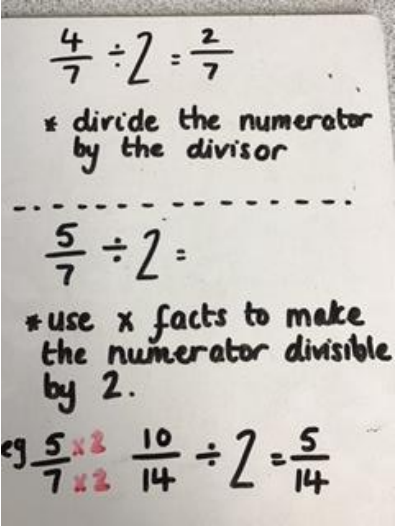
Having shaded in $1/3$ in the orange and $3/4$ in the green, the yellow is the overlap of colours. This indicates the answer.

Abstract

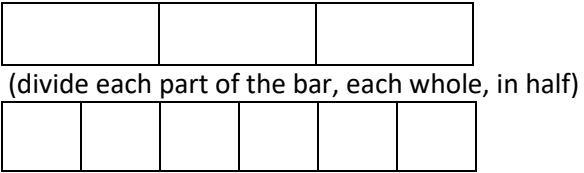
multiply the numerator and then the denominator

Dividing with fractions

Dividing a fraction by a whole number

| Concrete | Pictorial | Abstract |
|---|--|---|
| <p>$4/7 \div 2 =$</p> <p>Use fraction cards and counters</p> |  |  |

Dividing whole numbers by a fraction

| Concrete | Pictorial | Abstract |
|--|--|----------|
| <p>$3 \div 1/2 =$</p> <p>Exchange the 3 whole 'cups' into half cups and divide into piles of $1/2$</p> | <p>$3 \div 1/2 =$</p>  <p>So, $3 \div 1/2 = 6$</p> | |

Or represent as:

| | |
|--|--|
| | |
|--|--|

| | |
|--|--|
| | |
|--|--|

| | |
|--|--|
| | |
|--|--|