



Fractions Policy

Our School Vision

For with God, everything is possible
(Matthew 19:26)
#everythingispossible

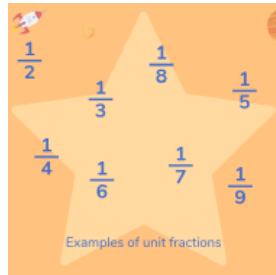
Through our continued service to our community and rooted in our Christian Values, the opportunities we provide, inspire our children and adults at our school to *learn, to grow and to flourish*. We are committed to developing our children into confident individuals who make a positive difference through developing a respect for themselves, each other and the world around them.

For with God, everything is possible.
(Matthew 19:26)

This policy should be used alongside the Maths curriculum offer and the Calculation policy.

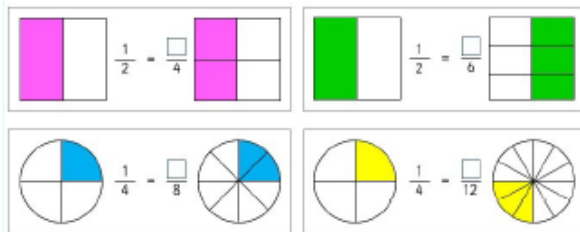
What is a unit fraction?

A unit fraction is any fraction with 1 as the numerator and a whole number for the denominator.



What are equivalent fractions?

Equivalent fractions are two or more fractions that are equal. A fraction is a part of a whole; the denominator represents how many equal parts the whole is split up into and the numerator represents the amount of those parts.



What is a non-unit fraction?

A non-unit fraction is a fraction with a number greater than one as its numerator and a whole number for the denominator.

What are the parts of a fraction?

A fraction has 3 parts.

The vinculum is the bar separating the two numbers.

The denominator is the number below the vinculum.

The numerator is the number above the vinculum.

What is a proper fraction?

This means that the fraction is below 1 or a whole. The denominator is bigger than the numerator.

Smaller → $\frac{3}{5}$
Larger → $\frac{5}{3}$

What are mixed numbers and improper fractions?

When you have a whole number and a fraction side by side like $1 \frac{1}{2}$, it's called a mixed number. You can convert this into a fraction but the numerator will be bigger than the denominator ($\frac{3}{2}$). This is also called an improper fraction.

$$3\frac{9}{13} \rightarrow \text{improper fraction}$$
$$\frac{44}{9} \rightarrow \text{mixed number}$$

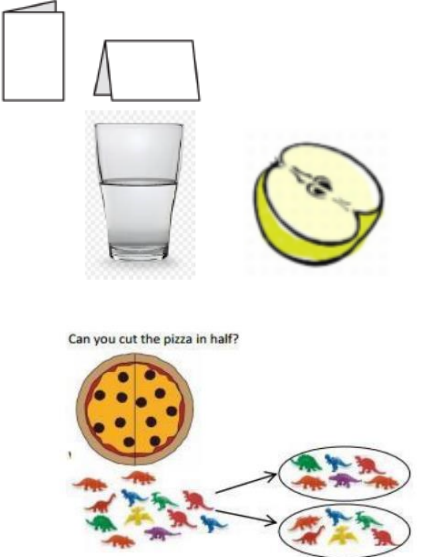
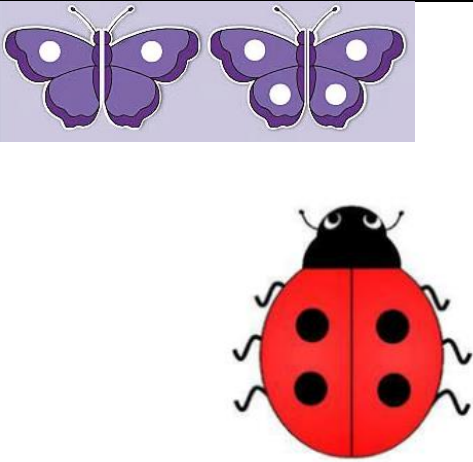
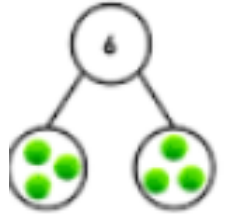
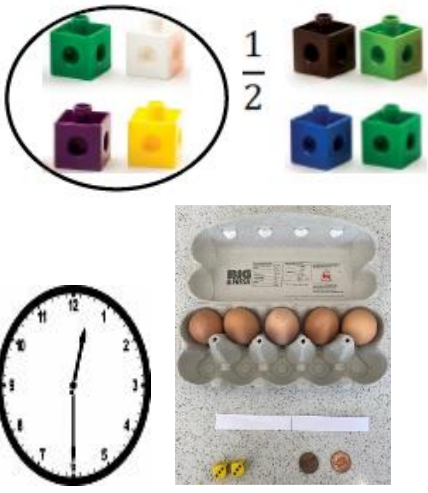
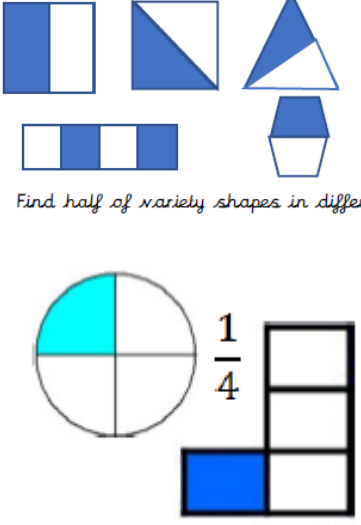
Simplifying Fractions

- To write a fraction in **simplest form** or **lowest terms** follow these two steps:

- Find the **Greatest Common Factor (GCF)** of the numerator and denominator.
- Divide both the numerator and the denominator by the GCF.

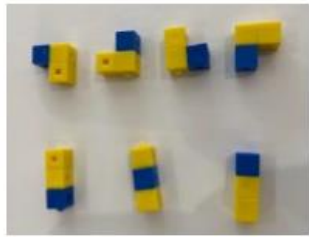
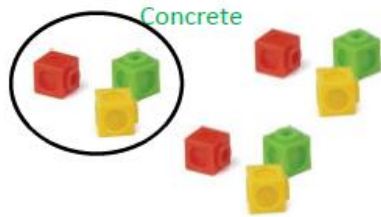
Example: $\frac{12}{18}$ $12 - 1,2,3,4,6,12$ $\frac{12}{18} \div \frac{6}{6} = \frac{2}{3}$
 $18 - 1,2,3,6,9,18$ $18 \div 6 = 3$

Recognising Fractions

	Concrete	Pictorial	Abstract
<p style="text-align: center;">EYFS</p> <p>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</p>	 <p style="text-align: center;">Can you cut the pizza in half?</p>		<p>Verbally identifying "half of 4 is 2".</p> <p>Exposure to part whole models:</p> 
<p style="text-align: center;">Year 1</p> <p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity</p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</p>	<p>As above progressing to:</p>  <p style="text-align: center;">$\frac{1}{2}$</p>	 <p style="text-align: center;">Find half of variety shapes in different ways</p> <p style="text-align: center;">$\frac{1}{4}$</p>	<p>Continued use of part whole models from EYFS:</p> <p style="text-align: center;">Abstract</p> <p>Half of 10 = <input type="text"/></p> <p>Half of 8 = <input type="text"/></p> <p>$\frac{1}{2}$ of 14 = <input type="text"/></p> <p>A quarter of 20 = <input type="text"/></p> <p>A quarter of 12 = <input type="text"/></p> <p>$\frac{1}{4}$ of 8 = <input type="text"/></p>

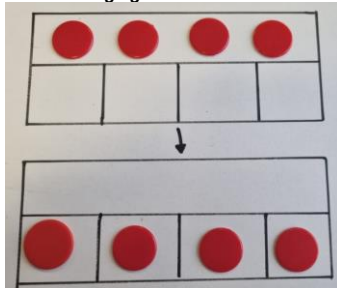
Year 2
 Recognise, find, name and write fractions $1/3$, $1/4$, $2/4$ and $3/4$ of a length, shape, set of objects or quantity

Recognising and naming fractions:

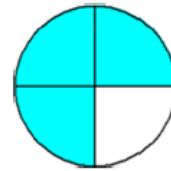
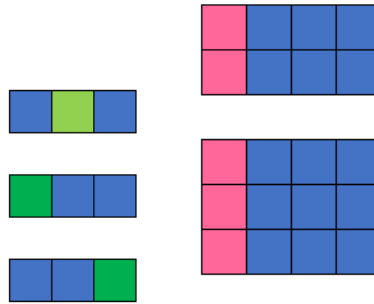


Find third using cubes or everyday items and show in different ways

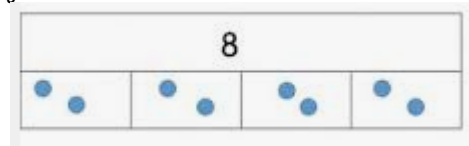
Finding fractions:



Recognising and naming fractions:

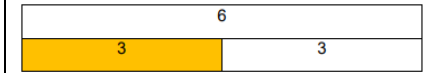


Finding fractions:

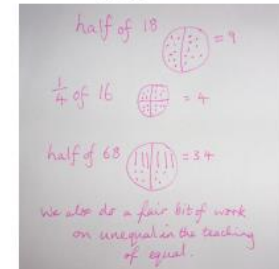
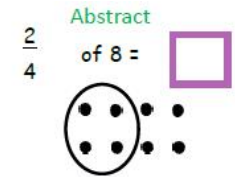
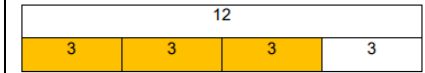


Finding fractions:

$1/2$ of 6 = 3



$1/4$ of 12 = 3



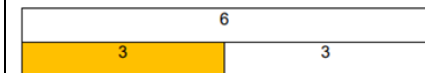
Year 3
 Recognise, find and write fractions of a discrete set of



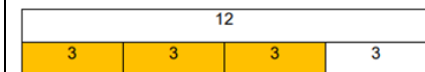
What fraction are apples?
 Pears? Limes?

Recognising fractions:

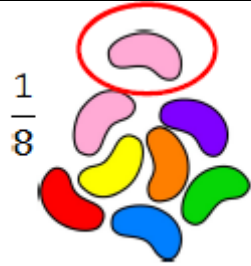
$1/2$ of 6 = 3



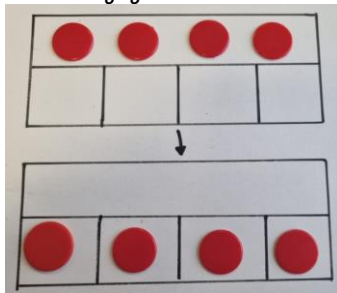
$1/4$ of 12 = 3



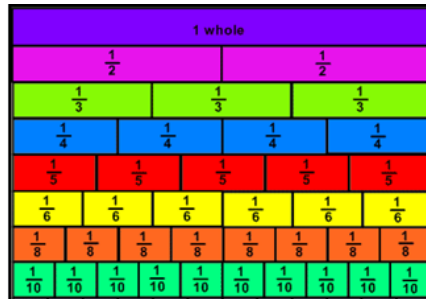
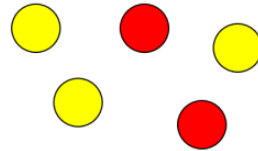
objects: unit fractions



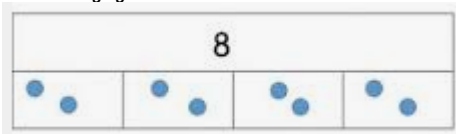
Finding fractions:



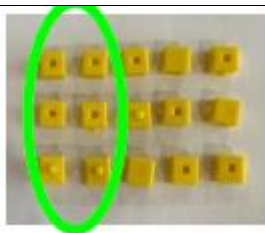
What fraction is red?



Finding fractions:



Year 3
Recognise, find and write fractions of a discrete set of objects: non-unit fractions with small denominators

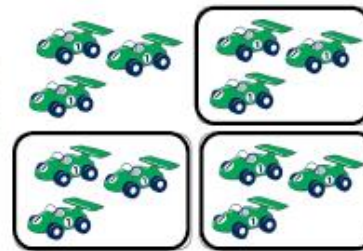


$2/5$ of 15 =

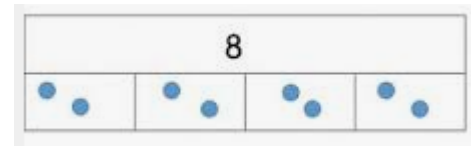
6

Finding fractions:

$3/4$



$3/4$ of 8 = 6



$1/5$ of 15 sweets = 3

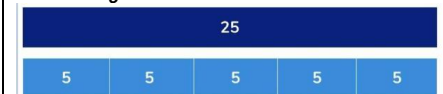
because $15 \div 5 = 3$

$2/5$ of 15 sweets = 6

because

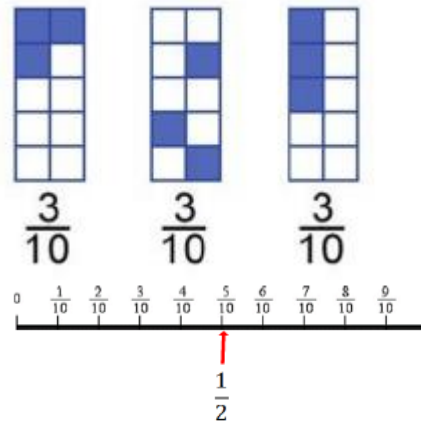
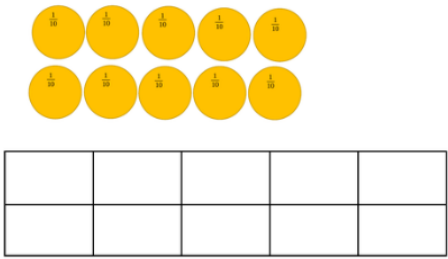
$15 \div 5 = 3$ and $3 \times 2 = 6$

$2/5$ of 25 = 10



Year 3

Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one - digit numbers or quantities by 10.

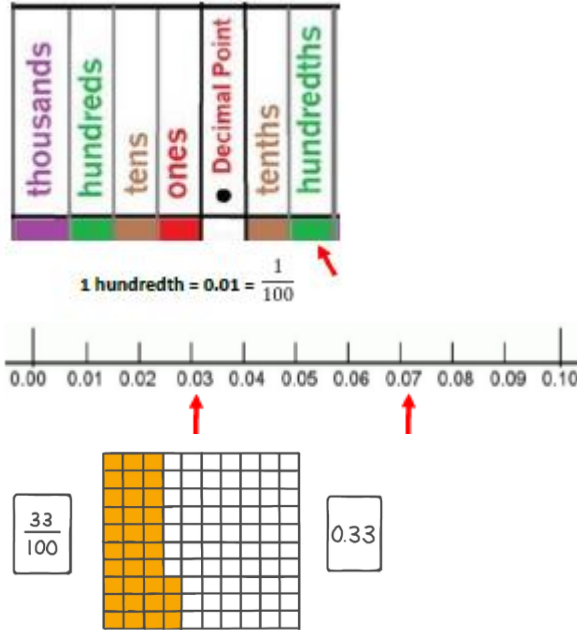
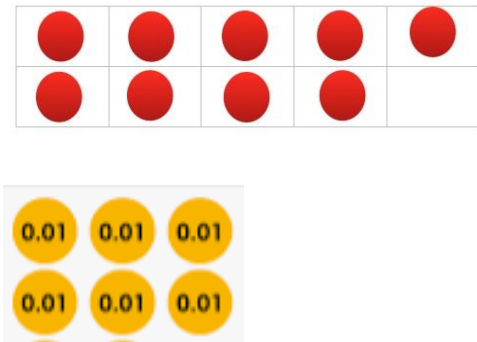


$\frac{1}{10}$ of 6 = 0.6
because $6 \div 10 = .6$

$\frac{1}{10}$ of 7 = 0.7
because $7 \div 10 = 0.7$

Year 4

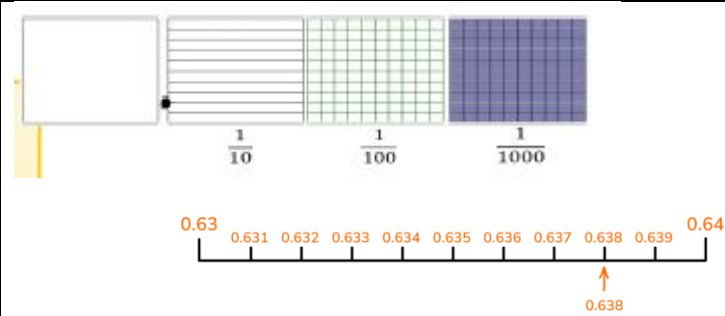
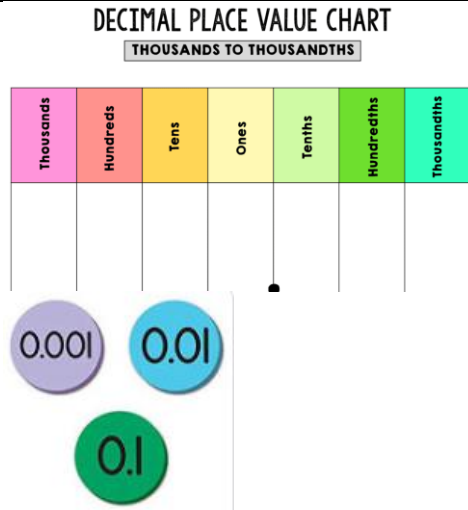
Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.



$\frac{1}{100}$ of 60 = 0.6
because $60 \div 100 = 0.6$

$\frac{1}{100}$ of 70 = 0.7
because $70 \div 100 = 0.7$

Year 5
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents



67.153
How many thousandths does this number have?
How many thousandths do you need to add to it to make it 67.16? _____

Comparing Fractions

Year 3
Compare and order unit fractions, and fractions with the same denominators

Concrete

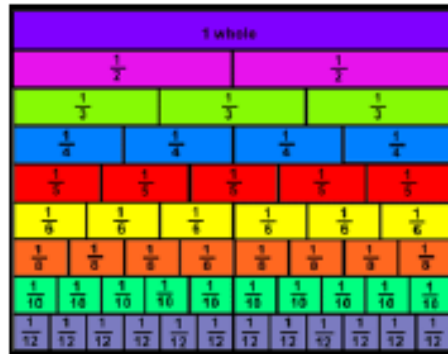
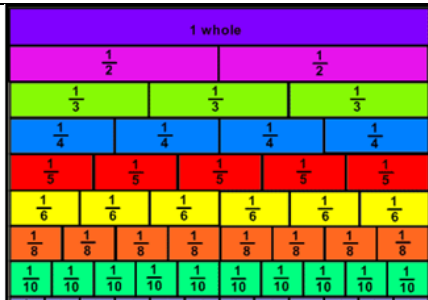
*Ensure you use different shape representations here.

Pictorial

*Ensure you use different shape representations here.

Abstract

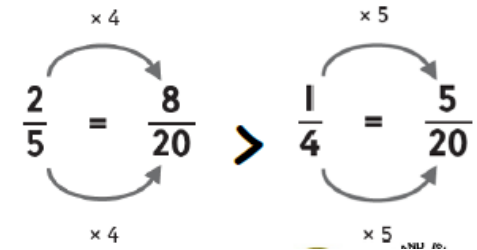
$\frac{2}{8}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{7}{8}$
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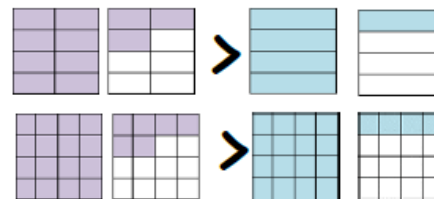
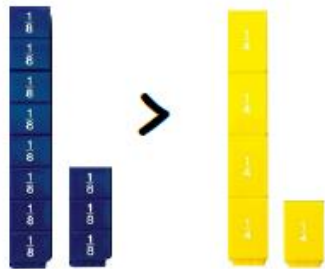
Year 5
Compare and order fractions whose denominators are all multiples of the same number



*Ensure you use different shape representations here.

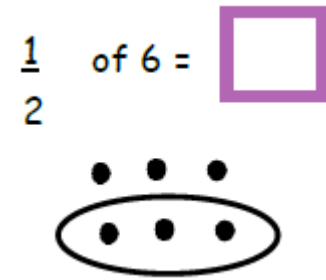
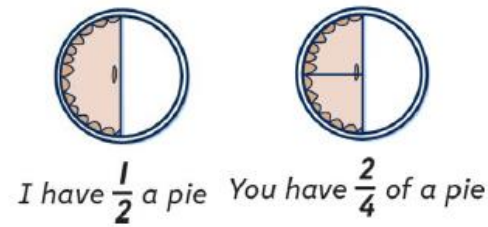
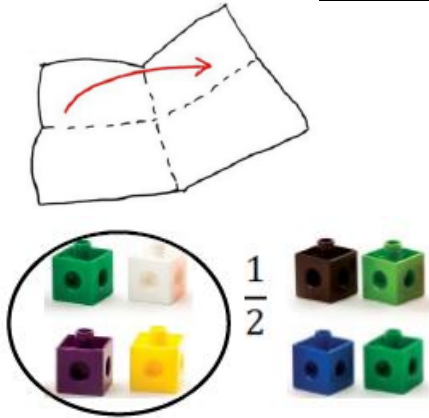


Year 6
Compare and order fractions, including fractions > 1

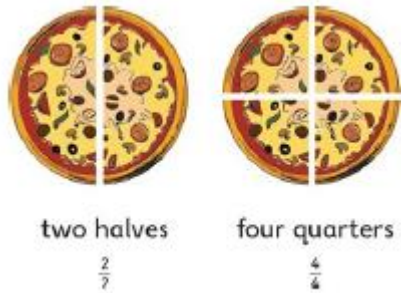


Which is greater?
 $\frac{2}{8} < \frac{6}{16}$
 Ordering from smallest to largest by using equivalent fractions:
 $\frac{5}{12}, \frac{2}{3}, \frac{5}{6}$
 $\frac{5}{12}, \frac{8}{12}, \frac{10}{12}$

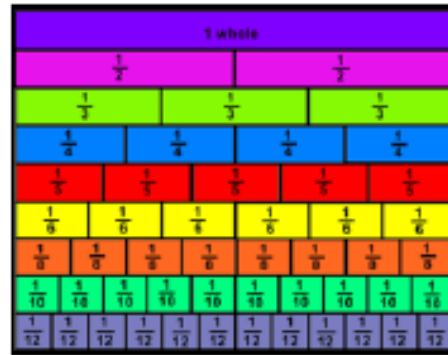
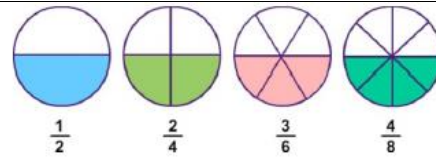
Year 2
Write simple fractions
e.g. $\frac{1}{2}$ of 6
= 3 and
recognise the
equivalence
of $\frac{2}{4}$ and
 $\frac{1}{2}$.



Year 3
Recognise
and show,
using
diagrams,
equivalent
fractions
with small
denominators

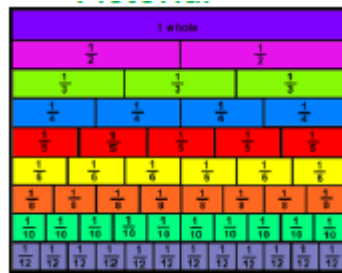
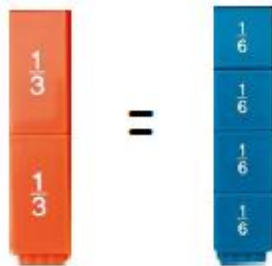


*Ensure you use different shape representations



Sam says that two quarters is
the same as one half.
Is he correct?
How do you know?

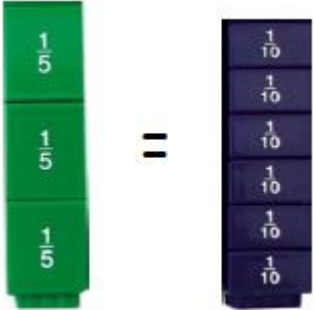
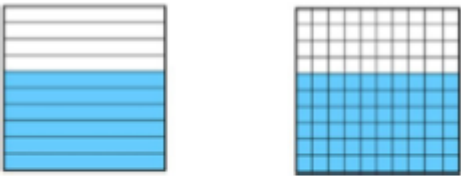
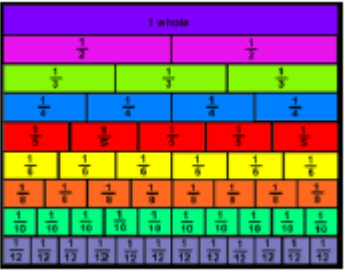
Year 4
Recognise
and show,
using
diagrams,
families of
common
equivalent
fractions




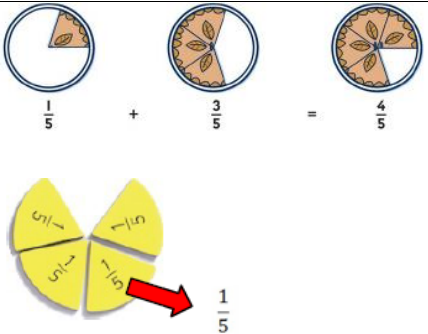
$$\frac{2}{3} = \frac{4}{6}$$

$$\frac{3}{5} = \frac{6}{10}$$

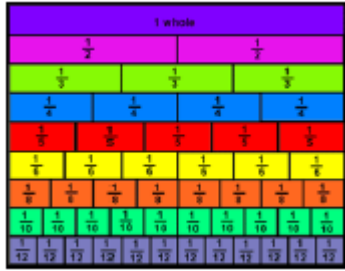
$$\frac{2}{12} = \frac{1}{6}$$

<p><u>Year 5</u> Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p>		 $\frac{6}{10} = \frac{60}{100}$ 	$\frac{3}{5} = \frac{6}{10} = \frac{60}{100}$ $\frac{3}{4} = \frac{75}{100}$ $\frac{1}{5} = \frac{2}{10} = \frac{20}{100}$
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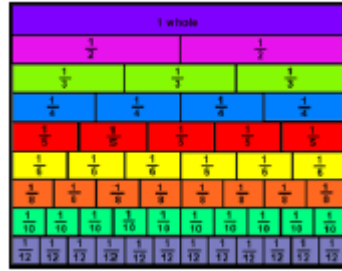
Calculating Fractions

	Concrete	Pictorial	Abstract
<p><u>Year 3</u> Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)</p> <p><u>Year 4</u> Add and subtract fractions with the same denominator</p>		 <p>Use of different shapes to show adding and subtracting fractions</p>	$\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ $\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$

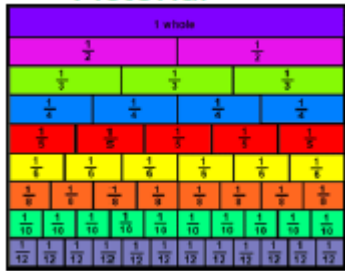
(incl answers greater than one)



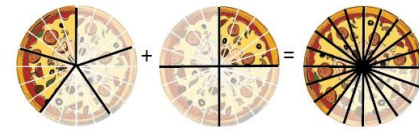
(Cut up and use as fraction strips)



Year 5
Add and subtract fractions with the same denominator and multiples of the same number



(Cut up and use as fraction strips)



$$\text{So, } \frac{8}{5} + \frac{5}{4} = \frac{13}{20}$$

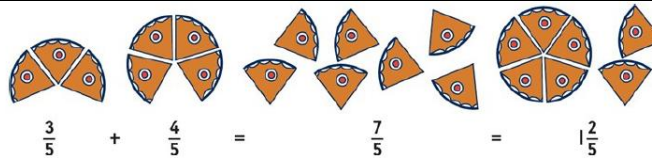
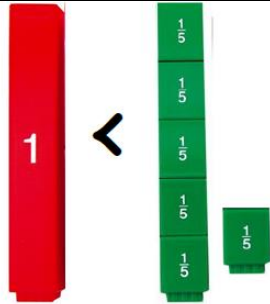
$$\frac{2}{5} + \frac{1}{4} = \frac{13}{20}$$

$$\frac{2}{5} = \frac{8}{20} \quad \frac{1}{4} = \frac{5}{20}$$

$$\text{So, } \frac{8}{20} - \frac{5}{20} = \frac{3}{20}$$

$$\frac{2}{5} - \frac{1}{4} = \frac{3}{20}$$

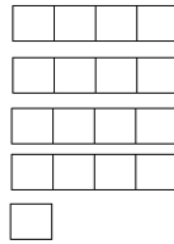
Year 5
Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g.



$$\frac{17}{4} = 4\frac{1}{4}$$

1. Divide numerator by denominator
2. Count remainder and represent as a fraction

$$\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$$



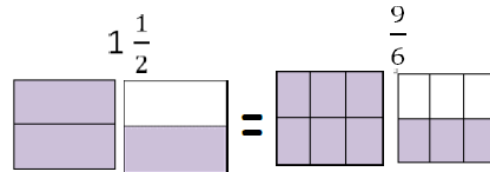
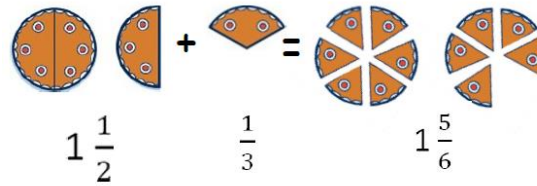
$$2\frac{1}{4}$$

Multiply the whole number by the denominator

$$\frac{2 \times 4}{4} + \frac{1}{4}$$

$$\frac{8}{4} + \frac{1}{4}$$

Year 6
Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions



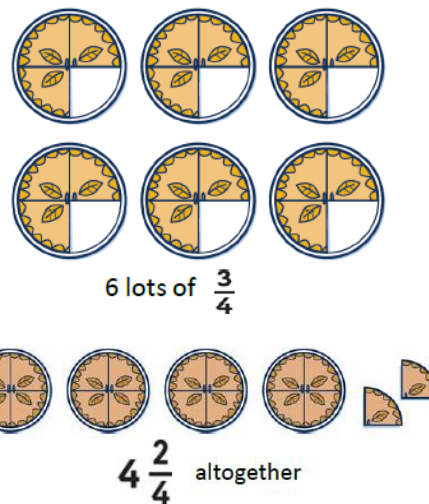
$$1\frac{1}{2} + \frac{1}{3} = 1\frac{5}{6}$$

because $1\frac{1}{2} = \frac{3}{2}$

$$\frac{3}{2} = \frac{9}{6} \text{ and } \frac{1}{3} = \frac{2}{6}$$

so $\frac{9}{6} + \frac{2}{6} = \frac{11}{6} = 1\frac{5}{6}$

Year 5
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams



Multiply a proper fraction by a whole number:

$$\frac{3}{4} \times 6 = \frac{18}{4}$$

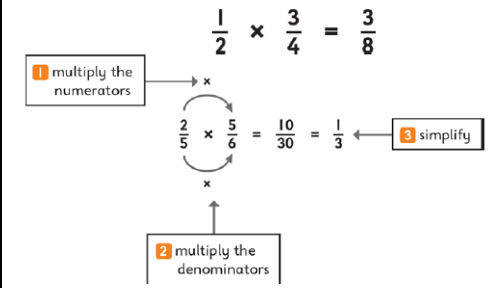
Change to a mixed number

$$\frac{18}{4} = 4\frac{2}{4}$$

(Multiply numerator by whole number)

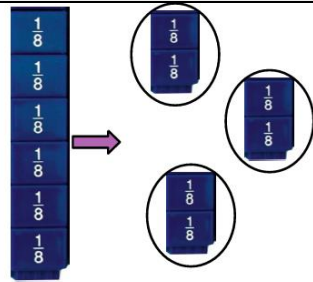
Year 6

Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $1/4 \times 1/2 = 1/8$)



Year 6

Divide proper fractions by whole numbers (e.g. $1/3 \div 2 = 1/6$)



$$\frac{1}{2} \div 3 = \frac{1}{6}$$

$$\frac{1}{2} \div 3 = \frac{1}{6}$$

$$\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$