

King George V Primary School



Fractions Calculation Policy

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

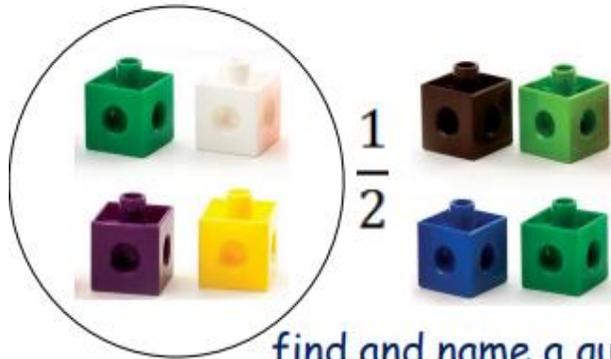
Year

1

Concrete

Pictorial

Abstract



A whole apple

Half an apple



1

$\frac{1}{2}$

Recognise, one

Half of 10 =

Half of 8 =

Half of 14 =

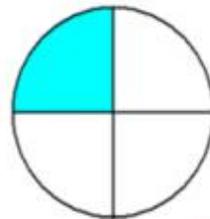
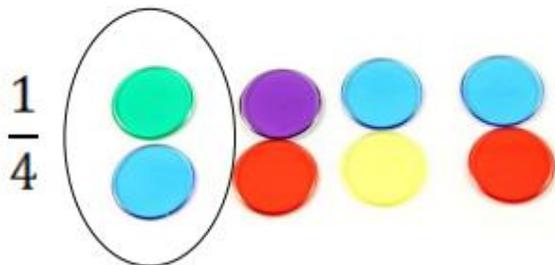
$\frac{1}{2}$

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

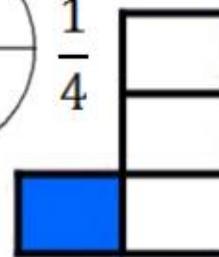
Concrete

Pictorial

Abstract



$\frac{1}{4}$



A quarter of 20 =

A quarter of 12 =

A quarter of 8 =

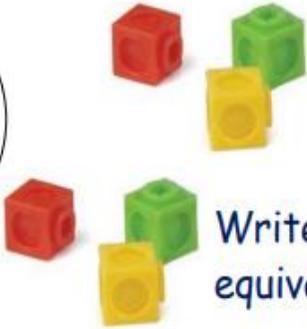
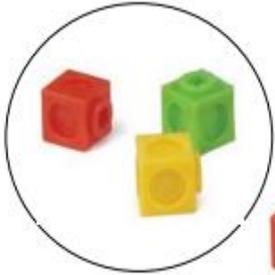
$\frac{1}{4}$

Fractions

Fractions

Recognise, find and name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.

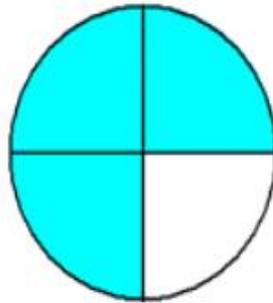
Concrete



Write simple equivalence

and recognise the $\frac{1}{2}$.

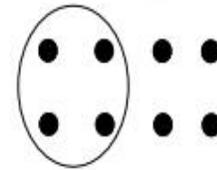
Pictorial



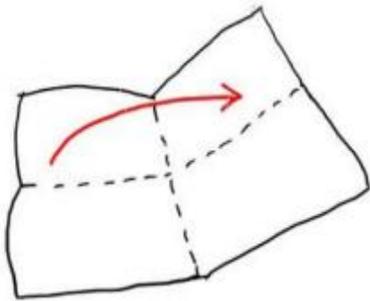
fractions of $\frac{2}{4}$ and

Abstract

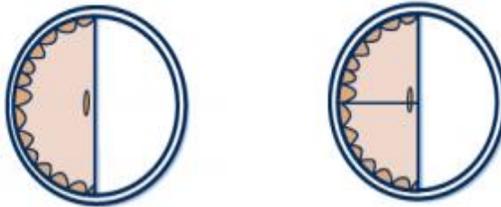
$$\frac{2}{4} \text{ of } 8 = \square$$



Concrete



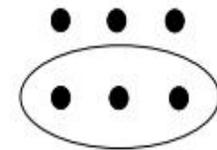
Pictorial



I have $\frac{1}{2}$ a pie You have $\frac{2}{4}$ of a pie

Abstract

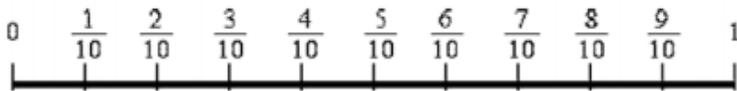
$$\frac{1}{2} \text{ of } 6 = \square$$



Fractions

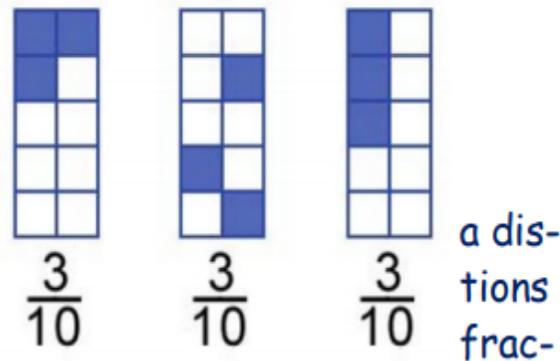
Count up and down in tenths: recognise that tenths arise from dividing an object into ten equal parts and in dividing one-digit numbers or quantities by ten.

Concrete



Recognise, find and write fractions of a concrete set of objects: unit fractions and non-unit fractions and use numbers.

Pictorial



Abstract

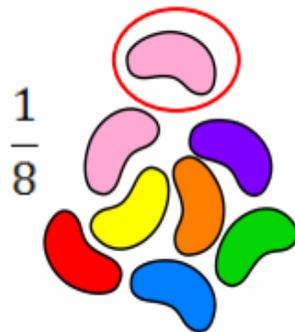
$$\frac{1}{10} \text{ of } 6 = 0.6$$

because $6 \div 10 = 0.6$

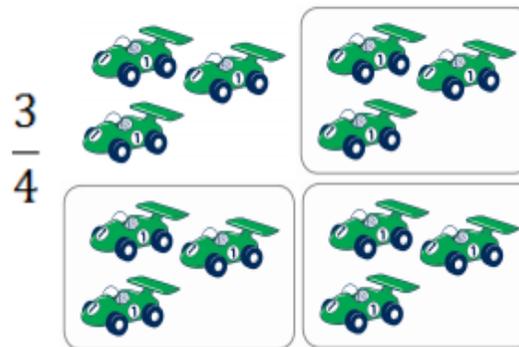
$$\frac{1}{10} \text{ of } 7 = 0.7$$

because $7 \div 10 = 0.7$

Concrete



Pictorial



Abstract

$$\frac{1}{5} \text{ of } 15 \text{ sweets} = 3$$

because $15 \div 5 = 3$

$$\frac{2}{5} \text{ of } 15 \text{ sweets} = 6$$

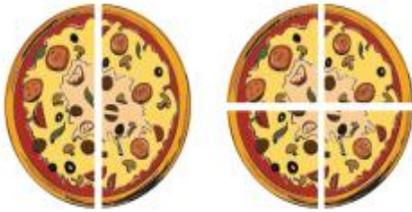
because $15 \div 5 = 3$ and $3 \times 2 = 6$

Recognise and show, using diagrams, equivalent fractions with small denominators.

Year

3

Concrete

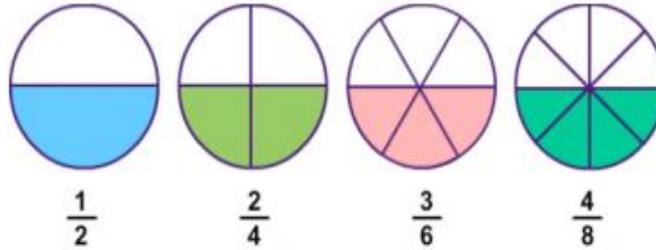


two halves
 $\frac{2}{2}$

four quarters
 $\frac{4}{4}$

Add
sub-

Pictorial



$\frac{1}{2}$

$\frac{2}{4}$

$\frac{3}{6}$

$\frac{4}{8}$

Abstract

Sam says that two quarters is the same as one half.

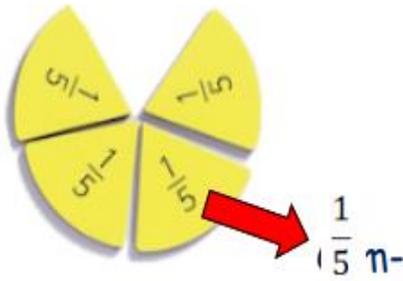
Is he correct?

How do you know?

and

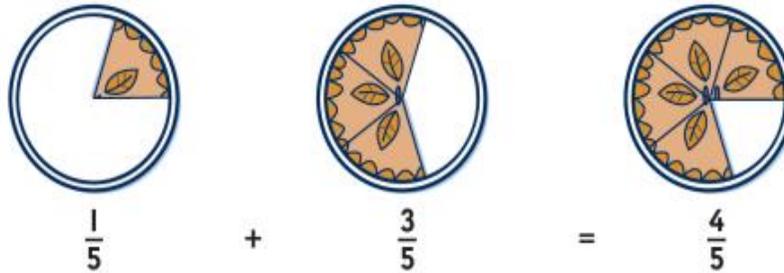
tract fractions with the same denominator.

Concrete



$\frac{4}{5}$

Pictorial



$\frac{1}{5}$

+

$\frac{3}{5}$

=

$\frac{4}{5}$

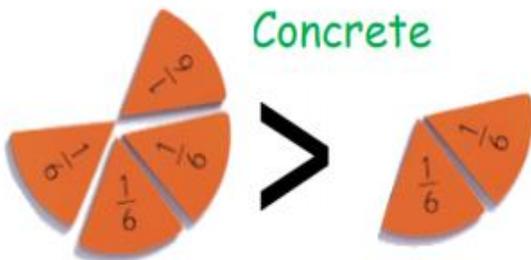
Abstract

$$\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$$

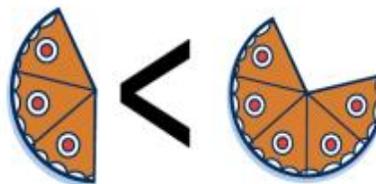
$$\frac{5}{8} - \frac{2}{8} = \frac{3}{8} \text{ pare with}$$

and order unit fractions
the same denominators.

Concrete



Pictorial



Abstract

$\frac{2}{8}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{7}{8}$
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Fractions

Fractions

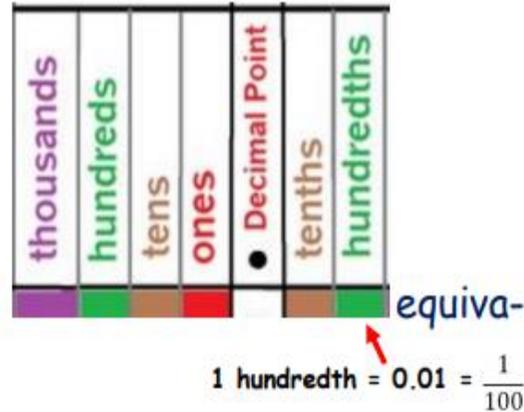
Count up and down in hundredths: recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10.

Concrete



Recognise and write decimal equivalents to $\frac{3}{100}$, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{7}{100}$ and $\frac{3}{4}$.

Pictorial



Abstract

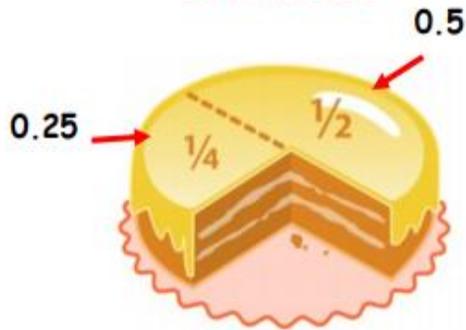
$$\frac{1}{100} \text{ of } 60 = 0.6$$

because $60 \div 100 = 0.6$

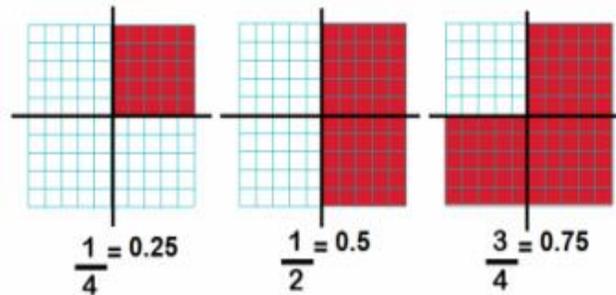
$$\frac{1}{10} \text{ of } 70 = 0.7$$

so $\frac{1}{100} \text{ of } 70 = 0.07$

Concrete



Pictorial



Abstract

$$\frac{1}{2} = 0.5$$

$$\frac{1}{4} = 0.25$$

$$\frac{3}{4} = 0.75$$

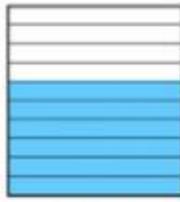
Fractions

Concrete

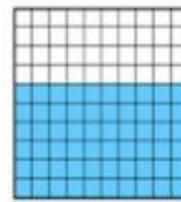


Rec- $\frac{1}{10}$ of the chocolate bar = 0.1

Pictorial



0.6
six tenths



0.60
sixty hundredths and show,
grams, families of common equivalents.

Abstract

$$\frac{1}{10} = 0.1$$

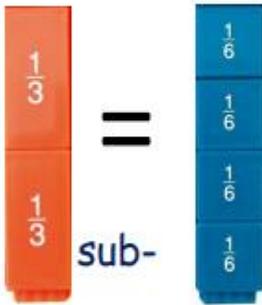
$$\frac{3}{10} = 0.3$$

$$\frac{5}{10} = \frac{1}{2} = 0.5$$

$$\frac{8}{100} = 0.08$$

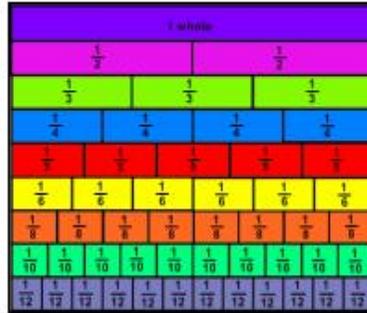
using dia-

Concrete



Add and subtract fractions
nator.

Pictorial



Abstract

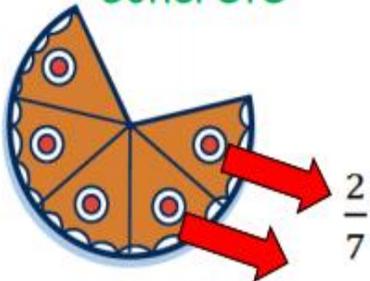
$$\frac{2}{3} = \frac{4}{6}$$

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

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

denomi-

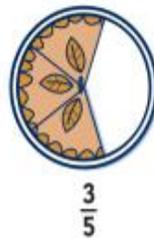
Concrete



Pictorial



+



=



Abstract

Sam eats $\frac{2}{7}$ of a whole pizza. How much does he have left?

Lucy and Ben both eat $\frac{3}{8}$ of a cake. How much have they eaten altogether?

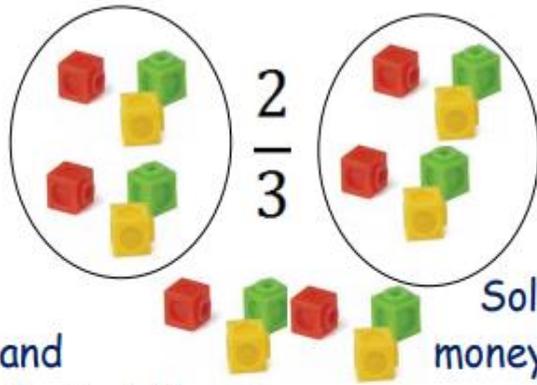
Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.

Year

4

Fractions

Concrete



Pictorial



Abstract

$$\frac{2}{3} \text{ of } \pounds 18$$

$$\pounds 18 \div 3 = \pounds 6$$

$$\pounds 6 \times 2 = \pounds 12$$

and decimal places.

Solve simple money problems involving fractions and decimals to

ure two

Concrete



Pictorial

U	.	t	h
Units	Decimal Point	Tenths	Hundredths
	■		

Abstract

$$100\text{cm} = 1\text{m}$$

$$50\text{cm} = \frac{1}{2} = 0.5\text{m}$$

$$25\text{cm} = \frac{1}{4} = 0.25\text{m}$$

$$10\text{cm} = \frac{1}{10} = 0.1\text{m}$$

$$30\text{cm} = \frac{3}{10} = 0.3\text{m}$$

Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.

Concrete

de-
same number.

Compare
nominators

and order
are all multi-
ples of the

Pictorial

$$\frac{6}{10} = \frac{60}{100}$$

fractions whose
ples of the

Abstract

$$\frac{3}{5} = \frac{6}{10} = \frac{60}{100}$$

$$\frac{3}{4} = \frac{75}{100}$$

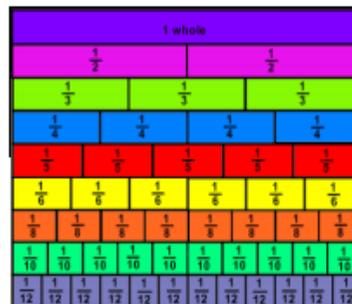
$$\frac{1}{5} = \frac{2}{10} = \frac{20}{100}$$

Concrete

has become
 $\frac{8}{20}$

has become
 $\frac{5}{20}$

Pictorial



Abstract

$$\frac{2}{5} \xrightarrow{\times 4} \frac{8}{20} \xrightarrow{\times 5} \frac{40}{100}$$

$$\frac{1}{4} \xrightarrow{\times 5} \frac{5}{20} \xrightarrow{\times 4} \frac{20}{100}$$

Fractions

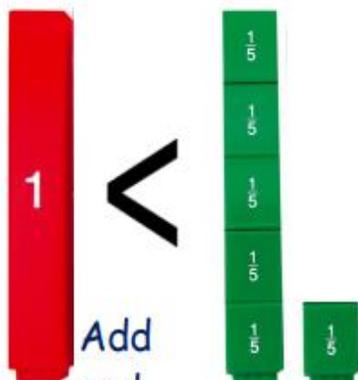
Recognise mixed numbers and improper fractions. Convert from one form to the other and write mathematical statements >1 as a mixed number.

Year

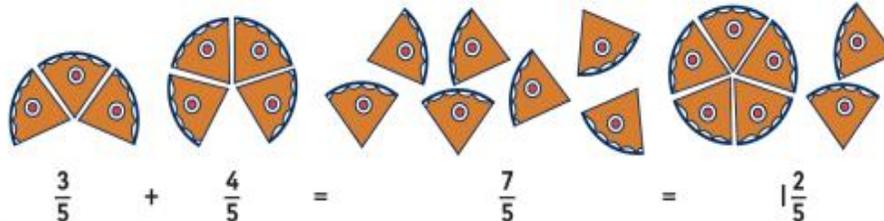
5

Fractions

Concrete



Pictorial



Abstract

$$\frac{7}{2} = 3\frac{1}{2}$$

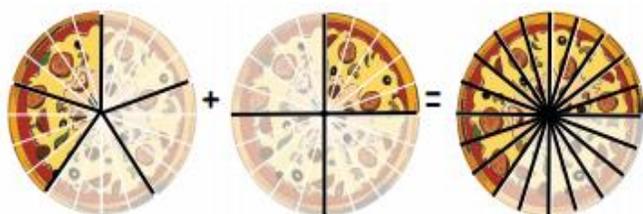
because $7 \div 2 = 3$ with 1 half left over

$$2\frac{1}{3} = \frac{7}{3}$$

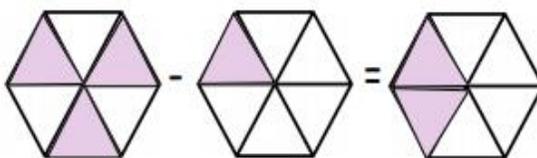
because $2 \times 3 = 6$ with 1 third left to add

and denominators that are multiples of the same numbers.

Concrete

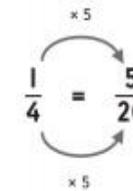
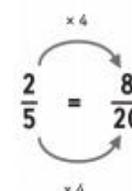


Pictorial



Abstract

$$\frac{2}{5} - \frac{1}{4}$$



So,

$$\frac{8}{20} + \frac{5}{20} = \frac{13}{20}$$

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

So,

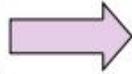
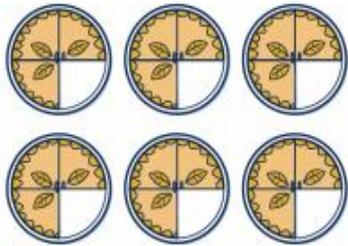
$$\frac{8}{20} - \frac{5}{20} = \frac{3}{20}$$

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

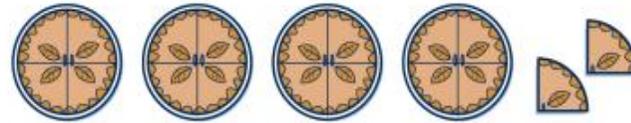
Fractions

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

Concrete



Pictorial



Abstract

Multiply a proper fraction by a whole number

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

Change to a mixed number:

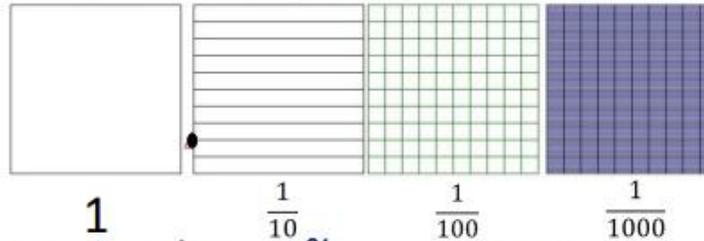
$$\frac{18}{4} = 4 \frac{2}{4}$$

to 6 lots of $\frac{3}{4}$ tenths, hundredths and $4 \frac{2}{4}$ altogether thousandths and relate $\frac{18}{4} = 4 \frac{2}{4}$ them decimal equivalents.

Concrete



Pictorial



Recognise $\frac{1}{10}$ % sym-

bol and understand the meaning: write % as a fraction, decimal and percentage.

Abstract

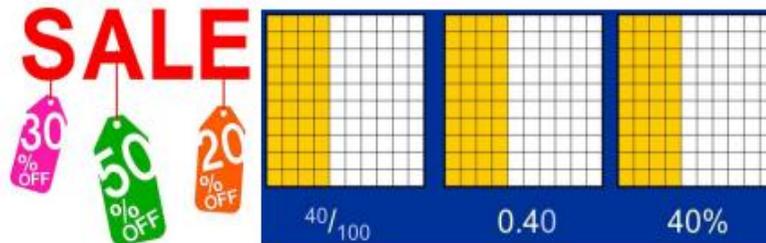
67.153

How many thousandths does this number have? How many more thousandths do you need to add to make 67.16?

Concrete



Pictorial



Abstract

$$\frac{4}{10} = 40\% = 0.4$$

$$\frac{32}{100} = 32\% = 0.32$$

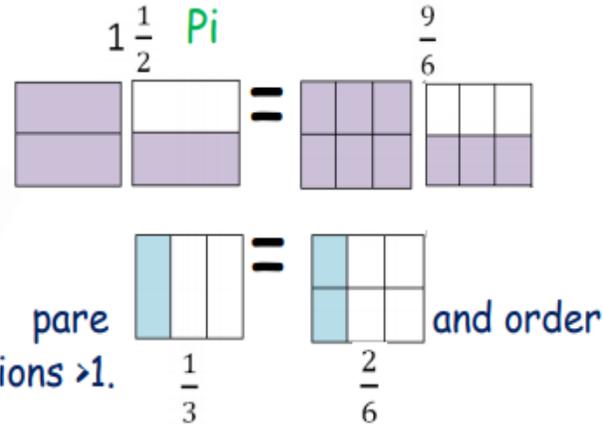
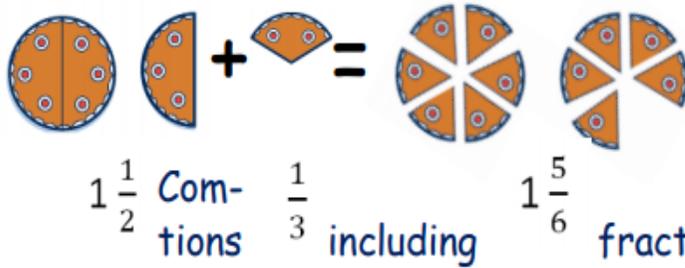
$$\frac{75}{100} = 75\% = 0.75$$

$$\frac{2}{25} = \frac{8}{100} = 8\% = 0.08$$

Fractions

Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions.

Concrete



Abstract

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

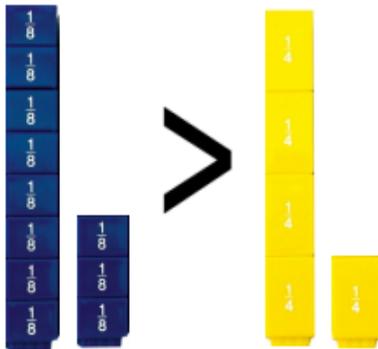
because $1 \frac{1}{2} = \frac{3}{2}$

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

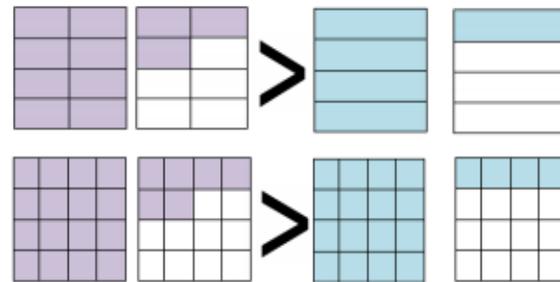
so $\frac{9}{6} + \frac{2}{6} = \frac{11}{6} = 1 \frac{5}{6}$

frac-

Concrete



Pictorial



Abstract

Which is greater?

$$\frac{2}{8} < \frac{6}{16}$$

Ordering from smallest to largest by using equivalent fractions:

$$\frac{5}{12} < \frac{2}{3} < \frac{5}{6}$$

$$\frac{5}{12} < \frac{8}{12} < \frac{10}{12}$$

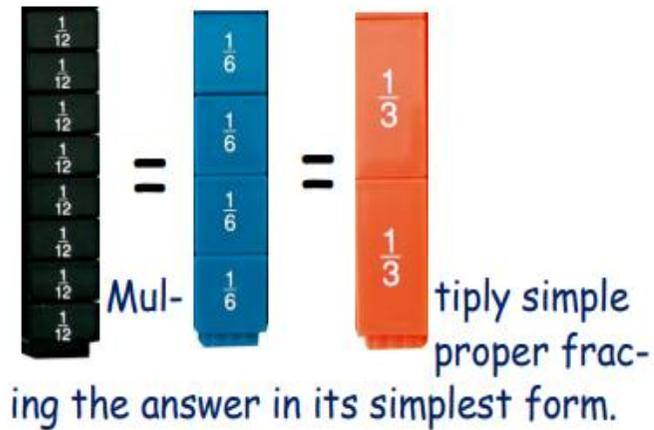
Use common factors to simplify fractions; use common multiples to express fractions in the same denominator.

Year

6

Fractions

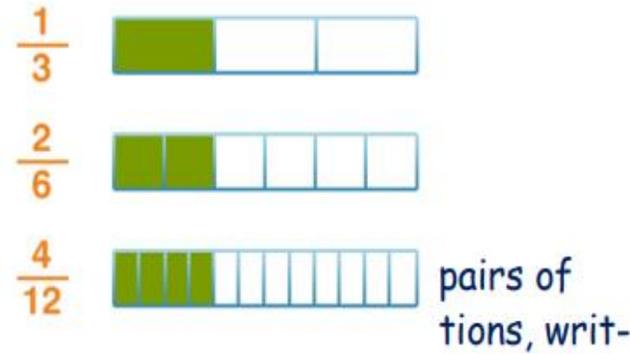
Concrete



$\frac{1}{12} + \frac{1}{12} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{1}{3}$

Multiplying the answer in its simplest form.

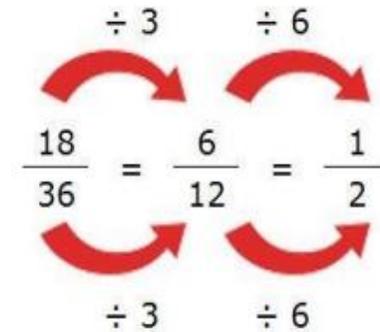
Pictorial



$\frac{1}{3}$ (1 of 3 parts shaded)
 $\frac{2}{6}$ (2 of 6 parts shaded)
 $\frac{4}{12}$ (4 of 12 parts shaded)

pairs of fractions, write-

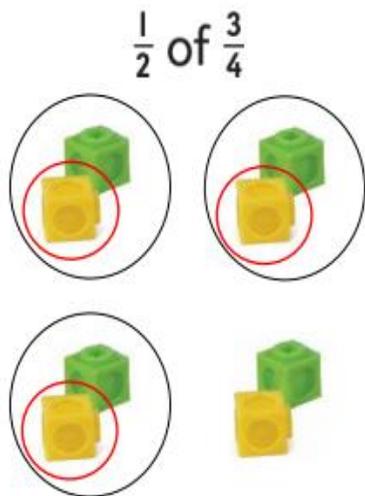
Abstract



$\frac{18}{36} \xrightarrow{\div 3} \frac{6}{12} \xrightarrow{\div 6} \frac{1}{2}$

Concrete

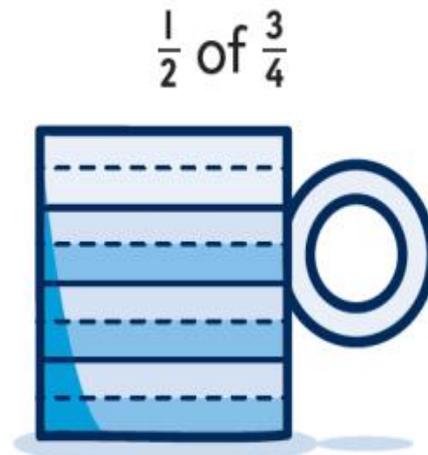
$\frac{1}{2}$ of $\frac{3}{4}$



Two circles, each containing a green cube and a yellow cube. One yellow cube is circled in red in each circle.

Pictorial

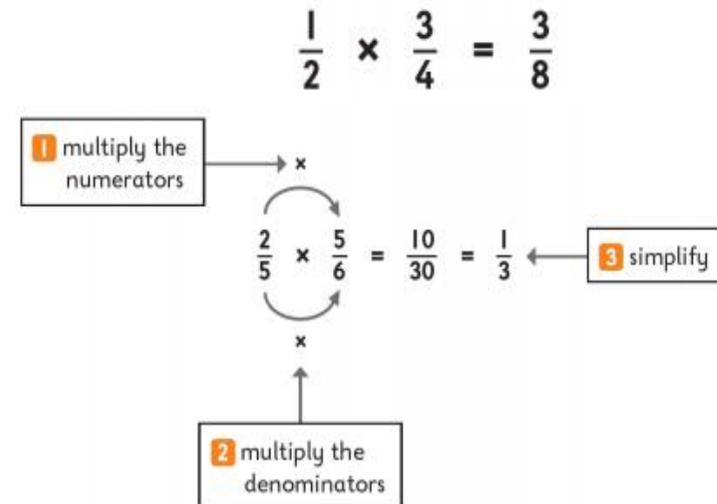
$\frac{1}{2}$ of $\frac{3}{4}$



A blue mug with a handle, divided into four horizontal sections. The bottom two sections are shaded blue.

Abstract

$\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$



$\frac{2}{5} \times \frac{5}{6} = \frac{10}{30} = \frac{1}{3}$

1 multiply the numerators

2 multiply the denominators

3 simplify

Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.

Year

6

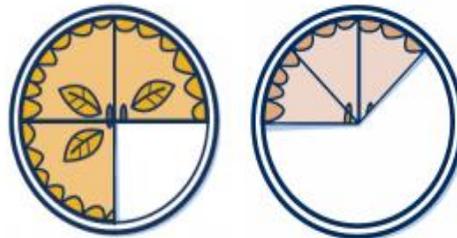
Fractions

Concrete



Pictorial

Which would you prefer 75% or $\frac{3}{8}$ of a pie?



75%

$\frac{3}{8}$

Divide proper fractions by whole numbers.

Abstract

John scored $\frac{40}{80}$ in his spelling test and Hannah scored 40%. Who scored more?

$$\text{John} = \frac{40}{80} = 50\%$$

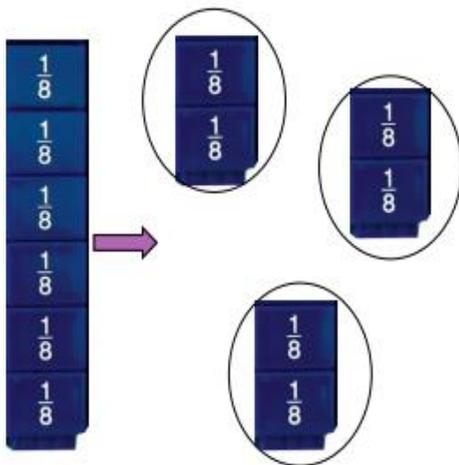
$$\text{Hannah} = 40\%$$

One paving slab is 0.3m long and another is $\frac{1}{4}$ of a metre. Which is longer?

$$\frac{1}{4} = 0.25\text{m}$$

0.3m is larger than 0.25m

Concrete



Pictorial



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

Abstract

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

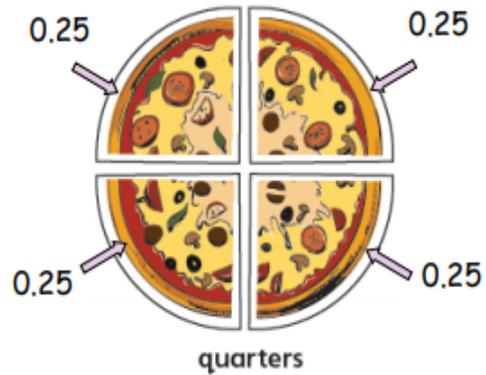
Keep it, change it, flip it!

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

Fractions

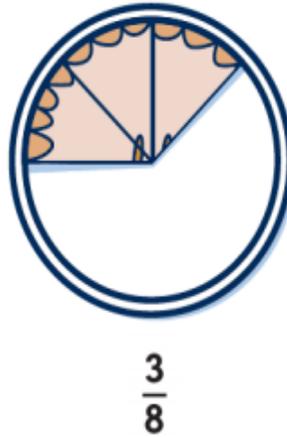
Associate fractions with division and calculate decimal fraction equivalents.

Concrete



Pictorial

3 slices of pie 'out of' 8



Abstract

$$\frac{3}{8}$$

3 'out of' 8 is the same as 3 'divided by' 8

$$3 \div 8 = 0.375$$

$$\text{So } \frac{3}{8} = 0.375$$