RUDYARD KIPLING PROGRESSION IN FRACTIONS (including Decimals and Percentages)

Vocabulary

Whole
Equal parts
Four equal parts
One half
Two halves
A quarter
Two quarters
Three quarters
One third, a third
Equivalence,
Equivalent

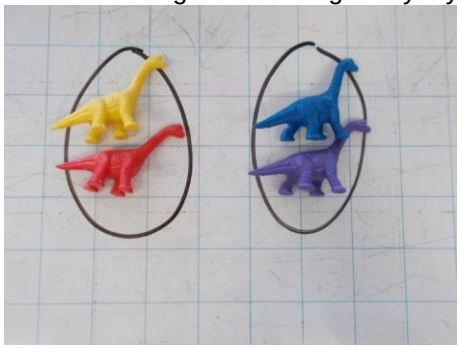
Numerator
Denominator
Unit fraction
Non unit fraction
Tenths
Proper fractions,
Improper fractions
Mixed numbers

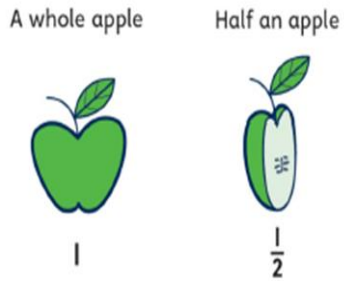
half, quarter, eighth
third, sixth, ninth,
twelfth
fifth, tenth, twentieth
hundredth,
thousandth

Recognising Fractions

Reception

- Finding halves using everyday objects. (i.e. cutting through the middle, sharing between two people or things)

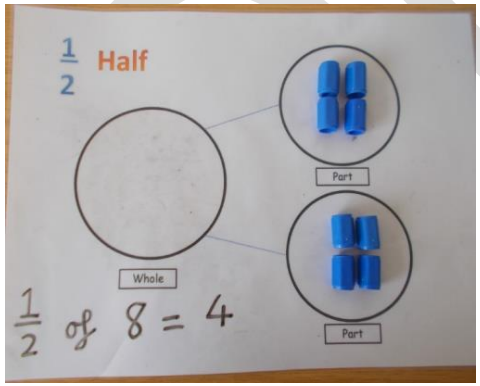


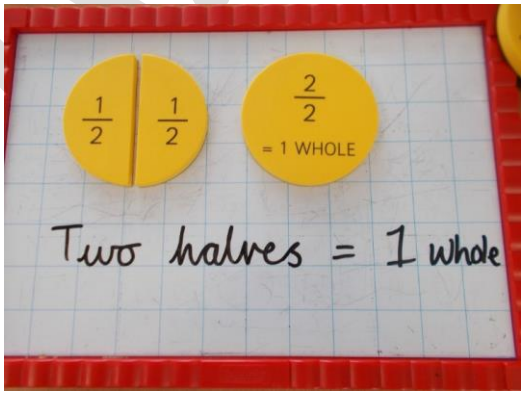


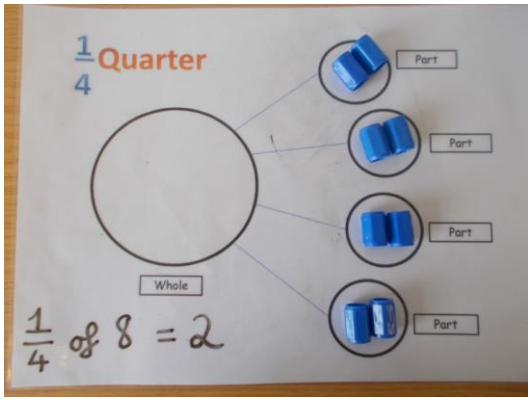
Half of 4 is 2 – sharing a whole group of objects between 2 groups.

Year 1

- 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.

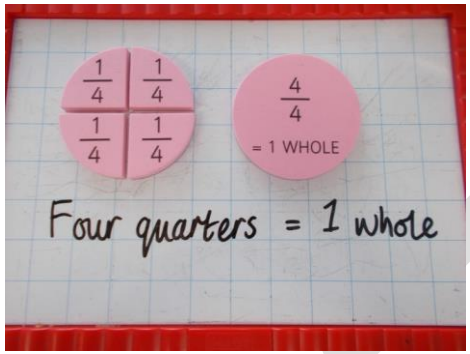


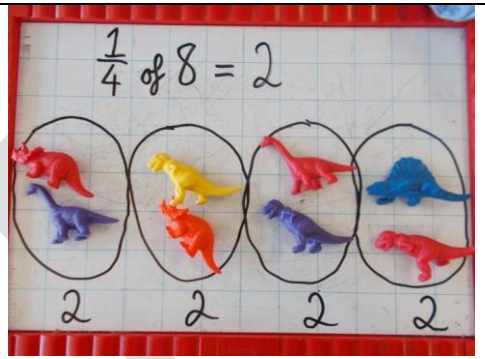




Resources

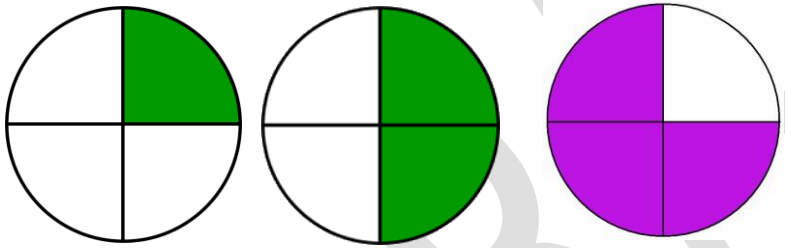
- Fraction Action (foam magnetic fraction circles)
- Fraction Tower (interlocking cubes with fractions on)
- Counting bear, dinosaurs
- Counters
- Numicon
- Numicon pegs
- 'Part-Part Whole' mats
- Cuisenaire
- Number lines
- Playdoh
- Place value counters (whole numbers as well as decimals)
- Place value sliders



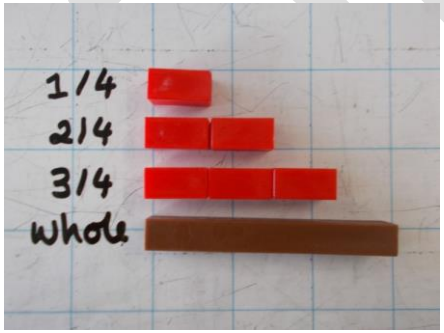


Year 2

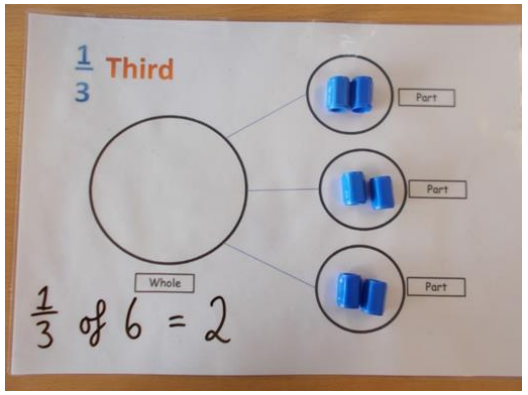
- Recognise, find, name and write fractions 1/3, 1/4, 2/4 and ¾ of a length, shape, set of objects or quantity



NB: Use a variety of shapes to show these fractions. Not just circles.



Cuisenaire can help support finding fractions of length.

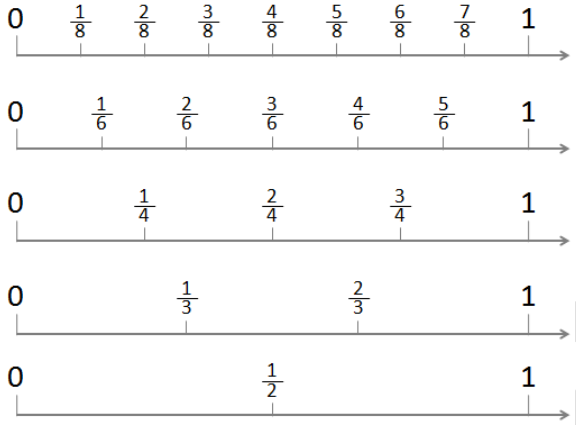


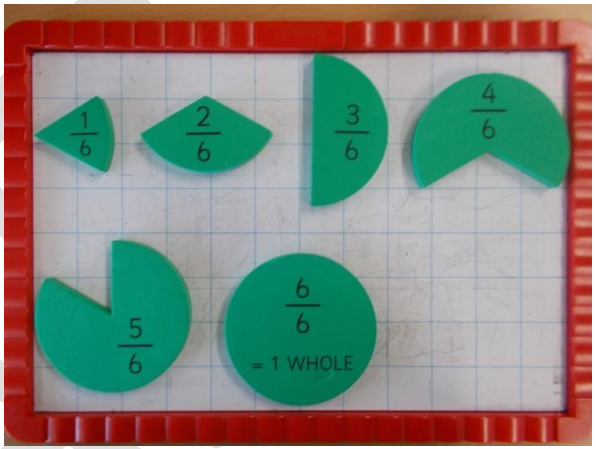
NB: Use 'part part whole' mats to support finding fractions of sets of objects and quantities.

Year 3

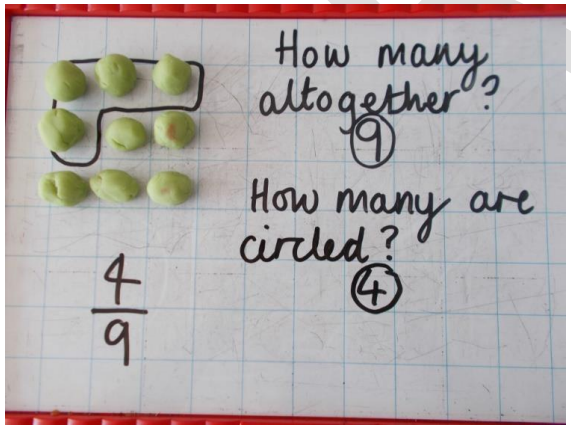
- Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators

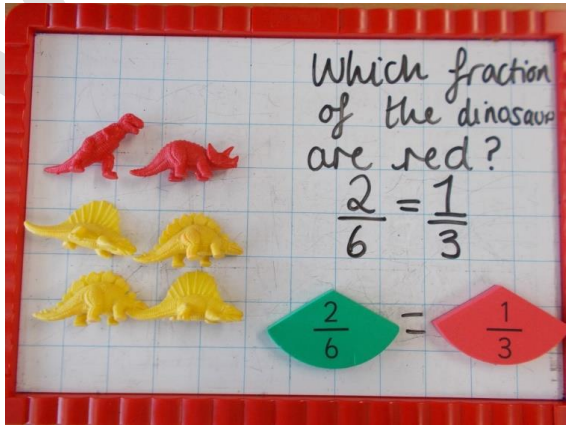
Counting up in fractions using a fraction number line



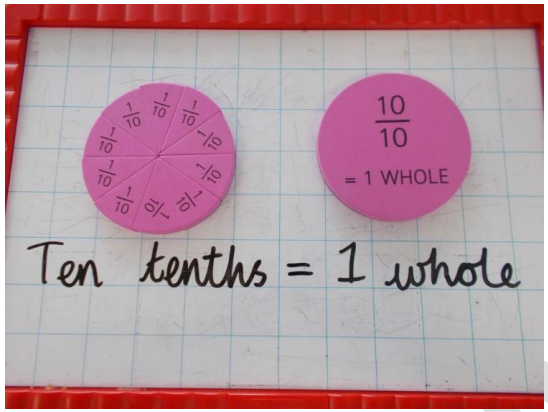


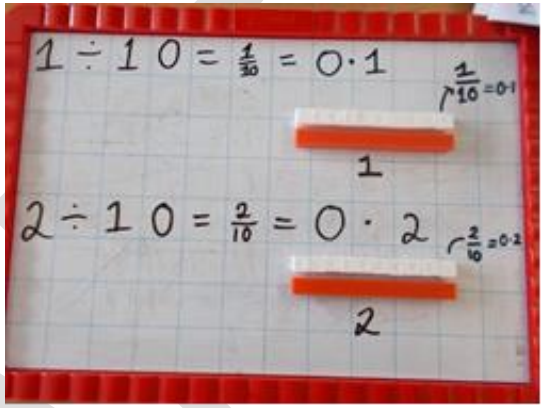
- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators





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





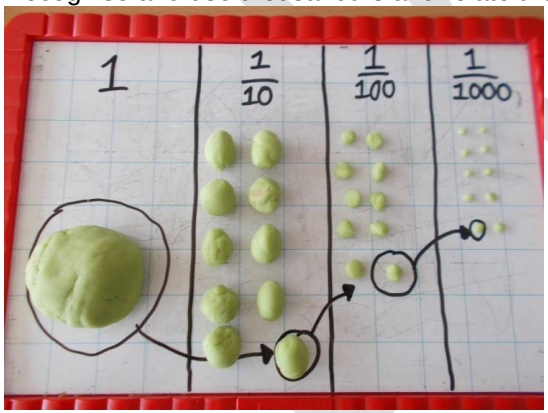
NB: It is vital that a secure sense of place value with tenths are established at this stage. Use resources to show this before moving onto the abstract.

Year 4

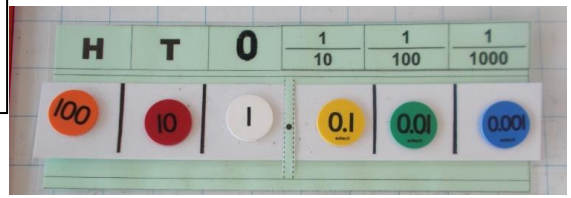
- Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten

Year 5

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



Using playdoh to show the relationship between hundredths and thousandths in relationship to 1 is an effective way of developing the understanding that the larger the denominator the smaller the fraction.



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Resources

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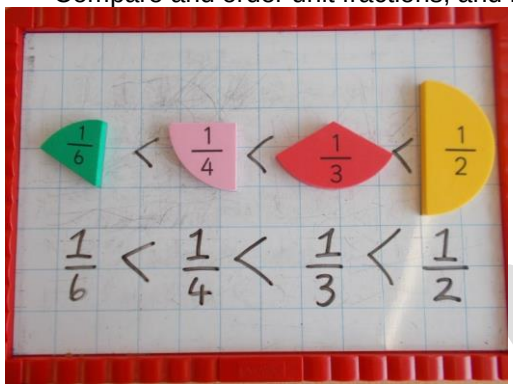
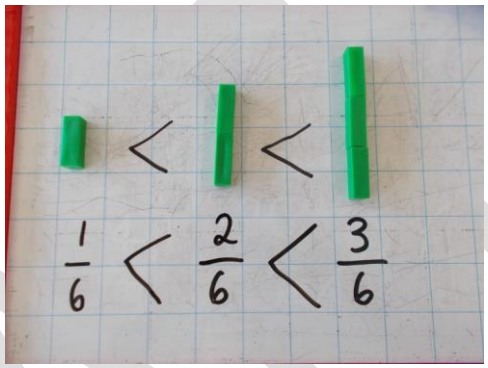
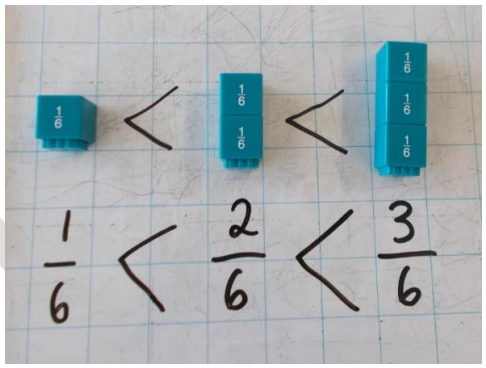
Comparing Fractions

Year 3

- Compare and order unit fractions, and fractions with the same denominators

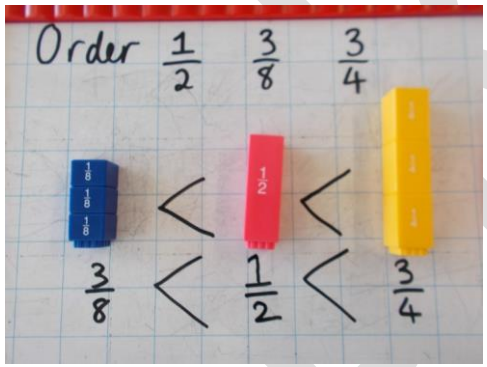


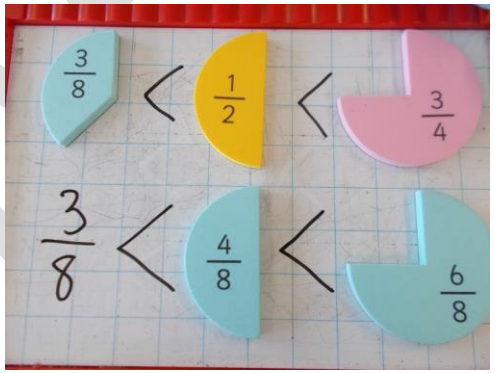


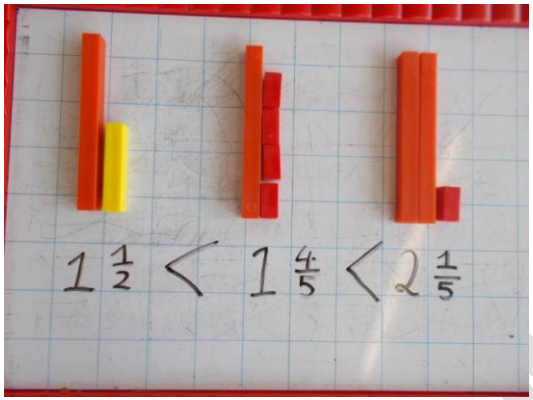


Year 4

- Compare and order fractions whose denominators are all multiples of the same number





• Counting bear, dinosaurs • Counters • Numicon • Numicon pegs • 'Part-Part Whole' mats • Cuisenaire • Number lines • Playdoh • Place value counters (whole numbers as well as decimals)	**<u>Year 5 and 6</u>** • Compare and order fractions, including fractions >1 

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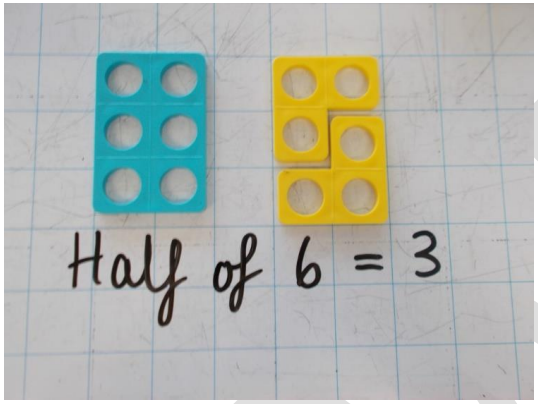
twelfth
fifth, tenth, twentieth
hundredth,
thousandth

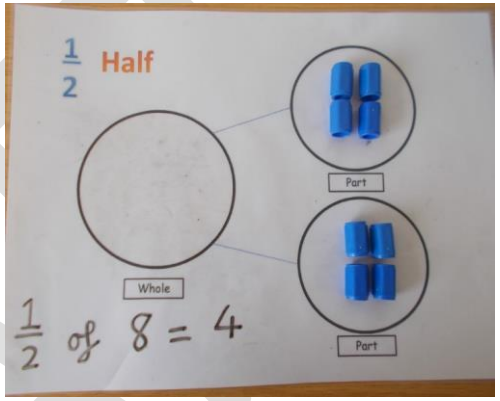
decimal, decimal
fraction
decimal point,
decimal place
percentage, per
cent, %

Equivalence of Fractions

Year 1

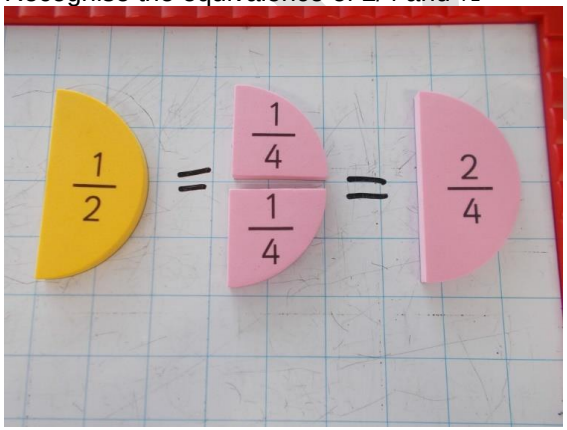
- Write simple fractions e.g. ½ of 6 = 3

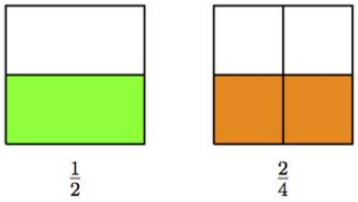


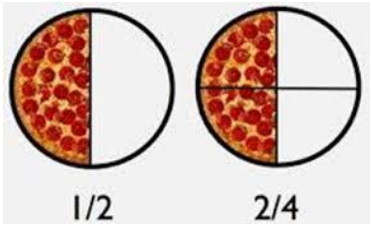


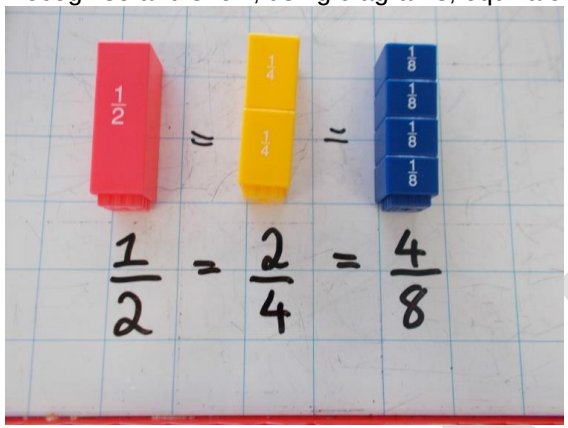
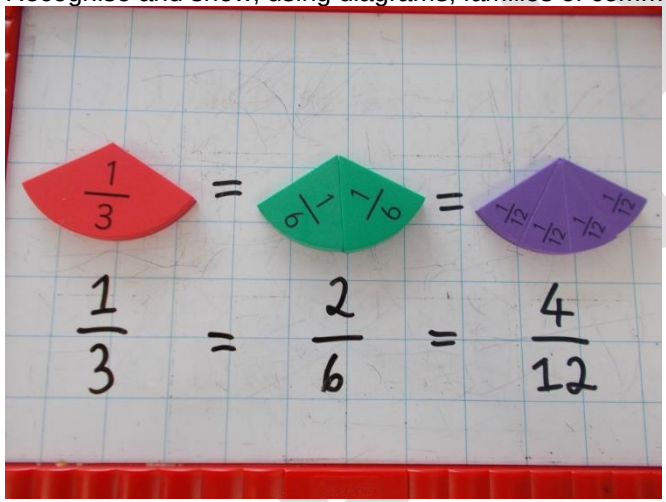
Year 2

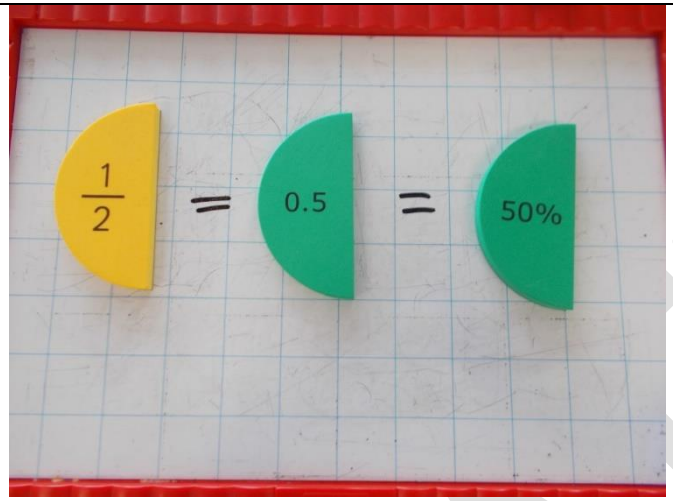
- Recognise the equivalence of 2/4 and ½

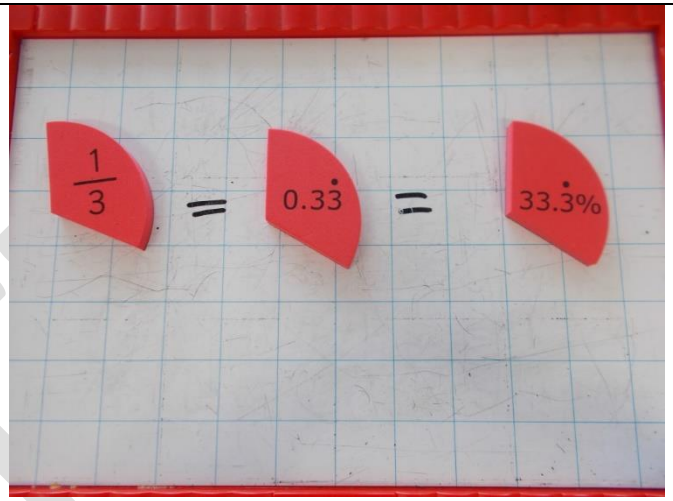






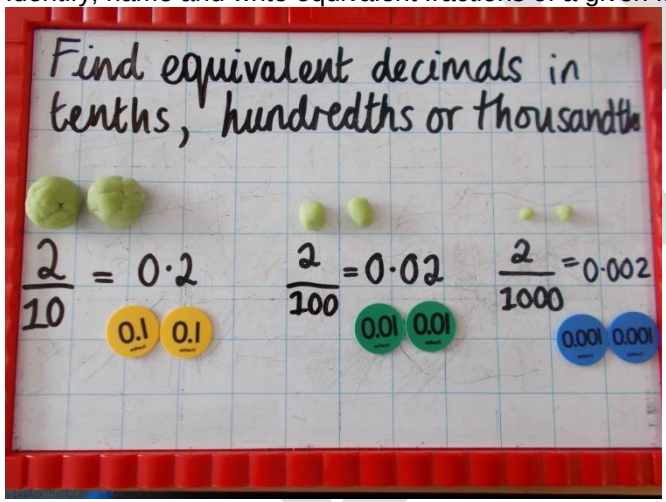
Resources	
• Fraction Action (foam magnetic fraction circles) • Decimal Action (foam magnetic decimal circles) • Percentage Action (foam magnetic percentage circles) • Fraction Tower (interlocking cubes with fractions on) • Counting bear, dinosaurs • Counters • Numicon • Numicon pegs • 'Part-Part Whole' mats • Cuisenaire • Number lines • Playdoh • Place value counters (whole numbers as well as decimals)	**Year 3** • Recognise and show, using diagrams, equivalent fractions with small denominators  **Year 4** • Recognise and show, using diagrams, families of common equivalent fractions   • Recognise and write decimal equivalents to 1/4; 1/2; ¾

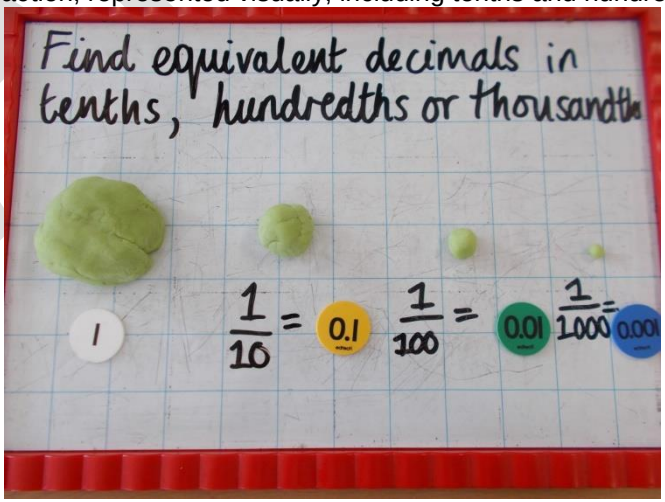




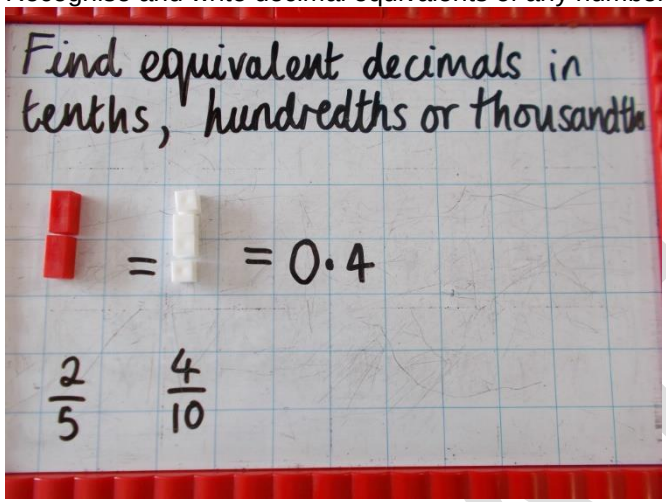
Year 5

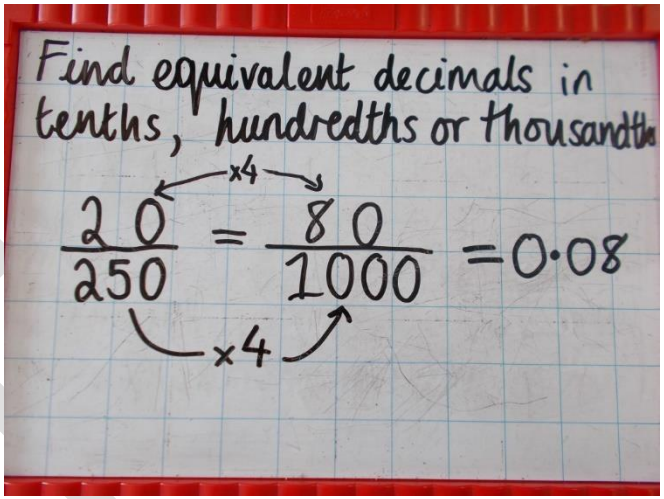
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths



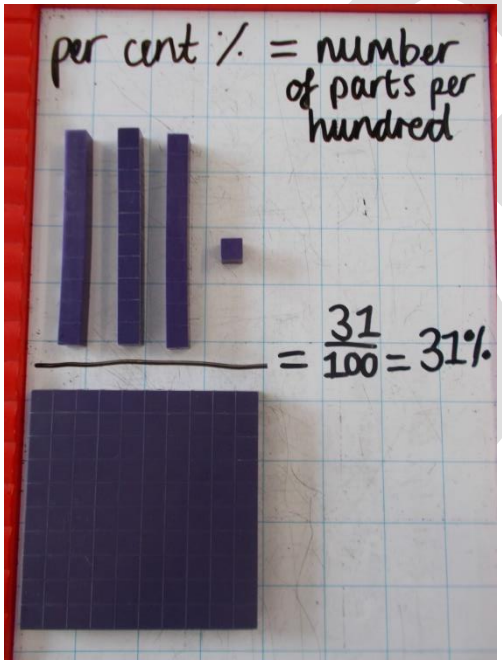


- Recognise and write decimal equivalents of any number of tenths or hundredths

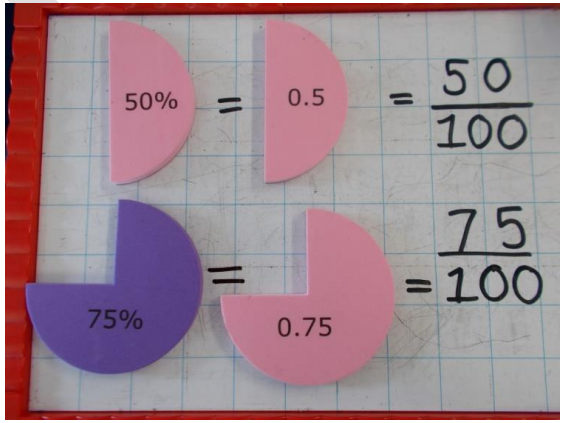


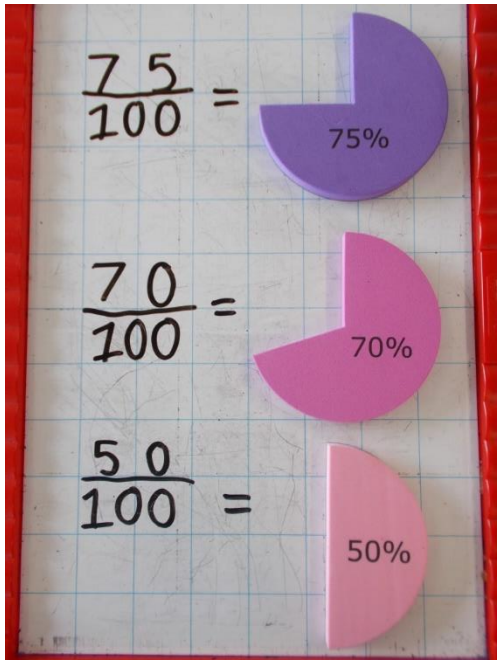


- Recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator 100 as a decimal fraction
- Read and write decimal numbers as fractions (e.g. 0.71 = 71/100)



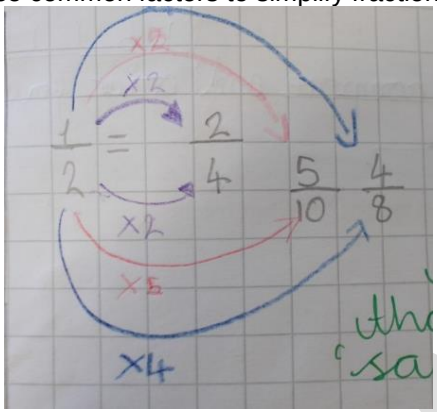
NB: ensure the understanding of per cent % means number of parts per 100. Using the 100 dienes can help to secure that understanding and provide a clear visual.

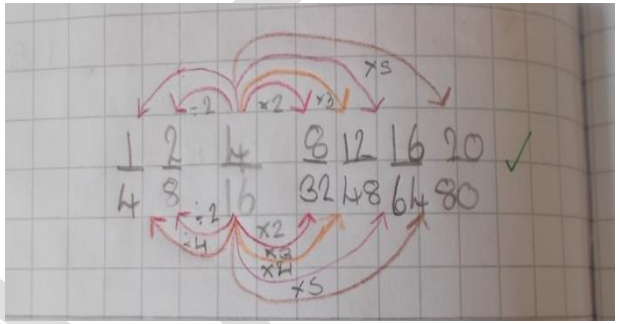




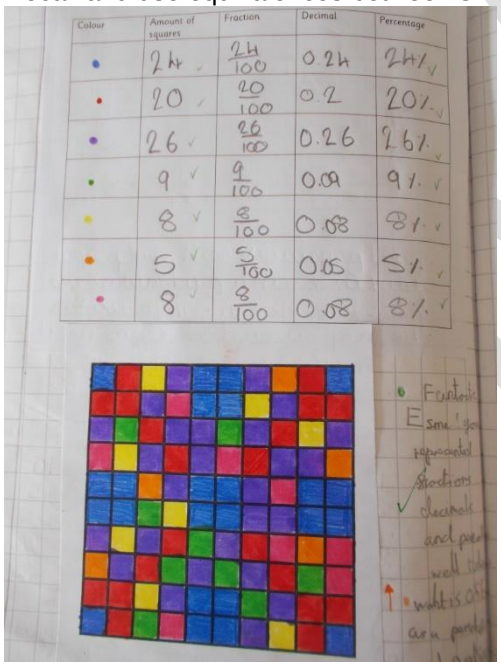
Year 6

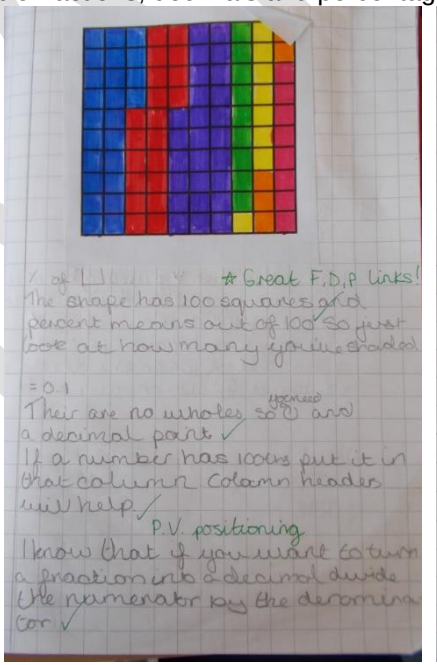
- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination

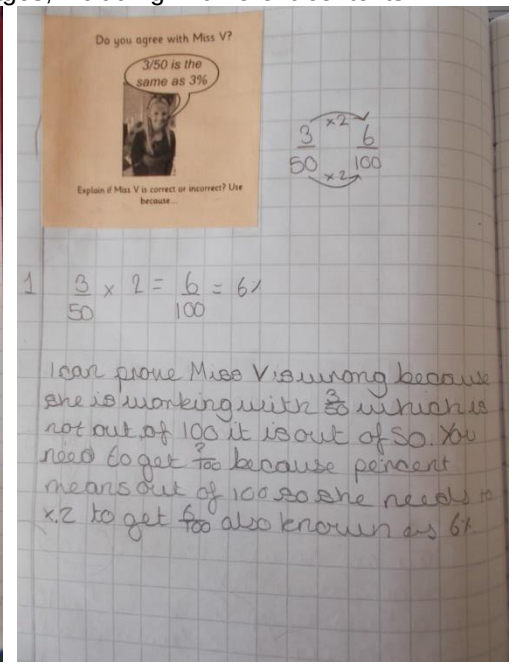




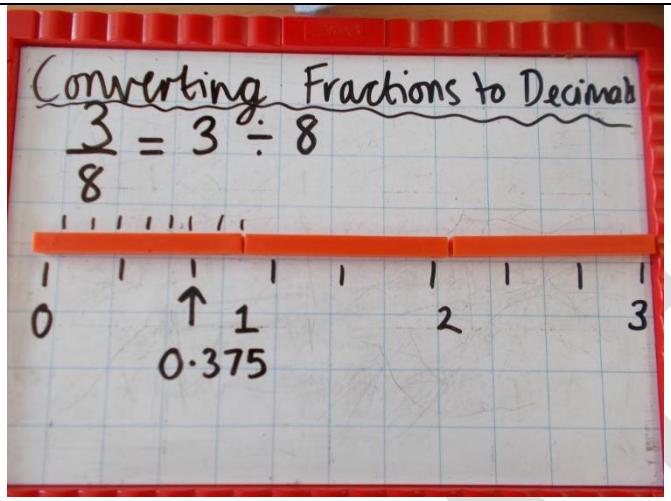
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts







- Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)

	 Converting Fractions to Decimals 3/8 = 3 ÷ 8 0 1 2 3 0·375

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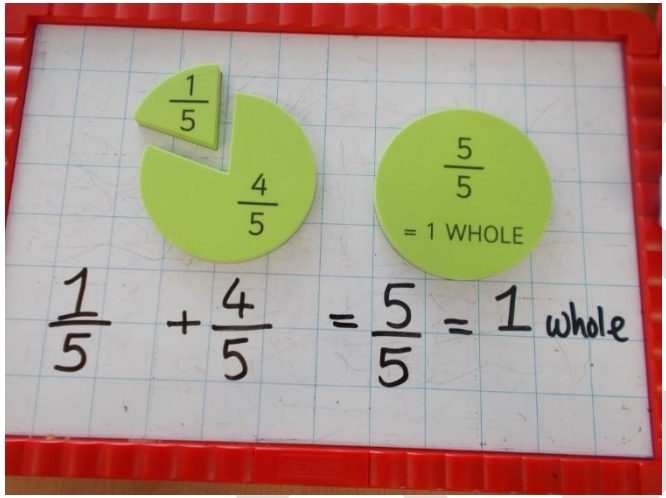
hundredth, thousandth

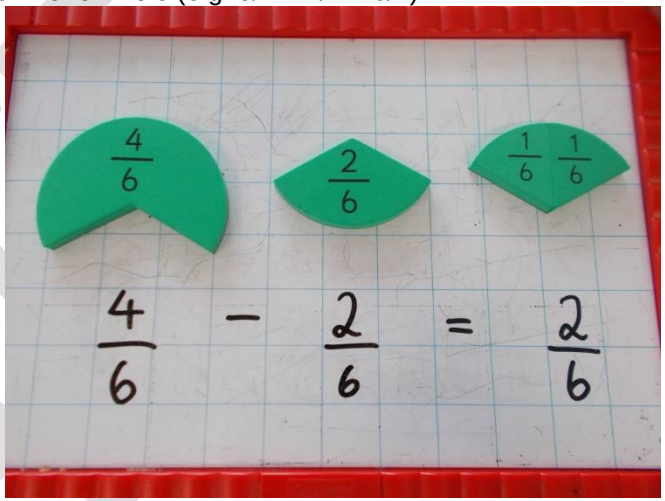
decimal, decimal fraction
decimal point, decimal place
percentage, per cent, %

Addition and Subtraction of Fractions (see Addition and Subtraction policy for vocabulary)

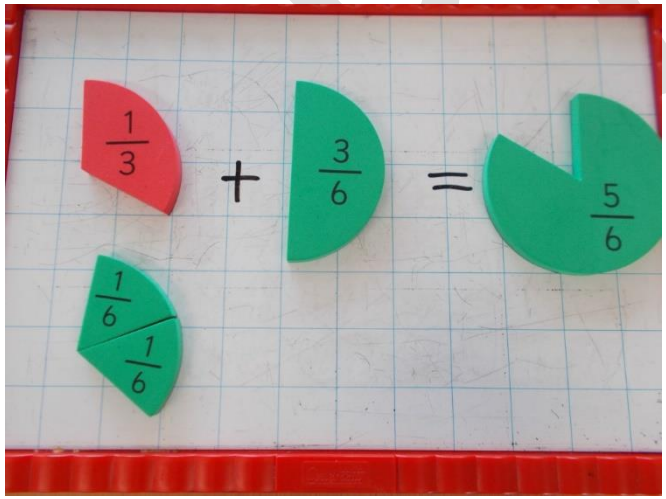
Year 3 and 4

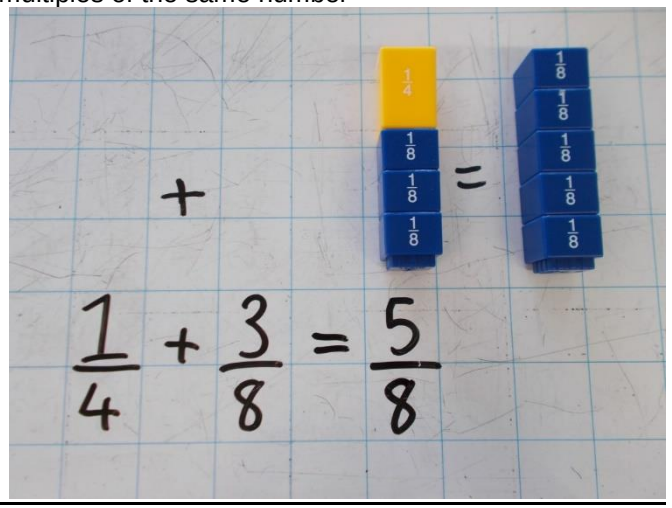
- Add and subtract fractions with the same denominator within one whole (e.g. 5/7 + 1/7 = 6/7)

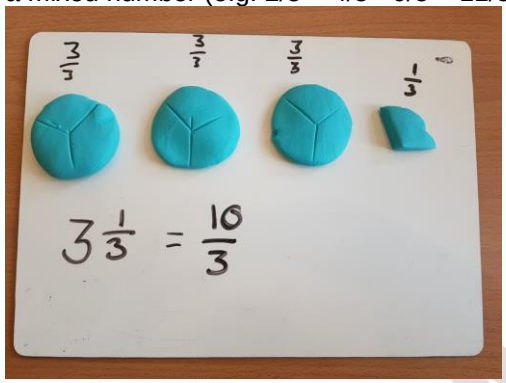
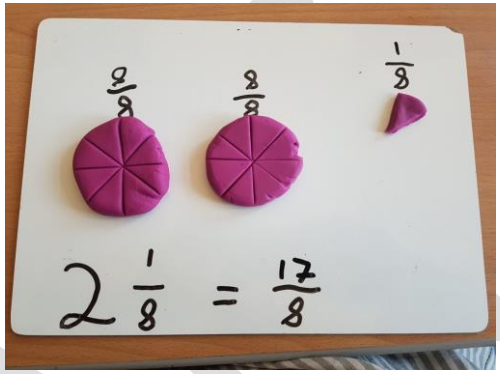
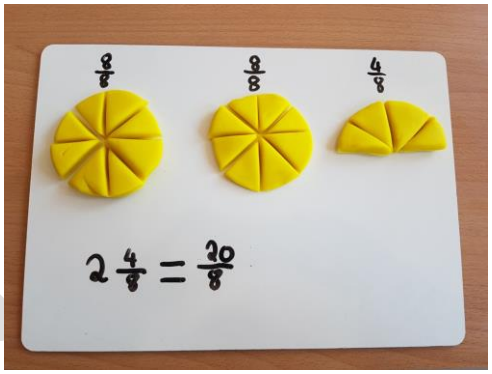
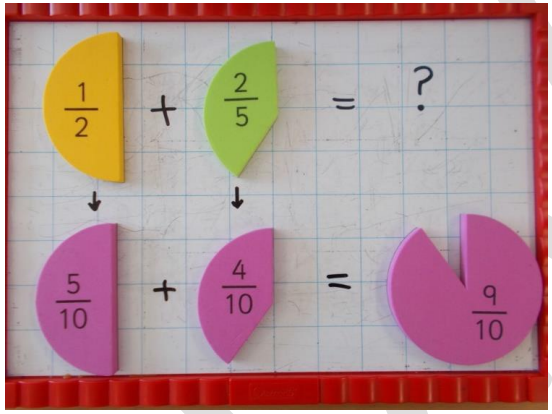
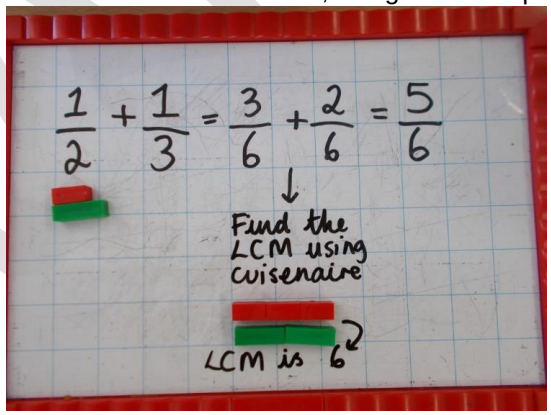


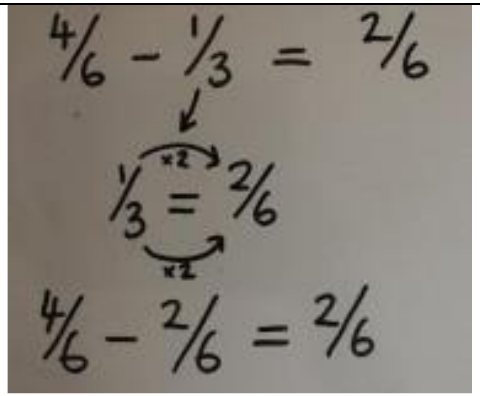


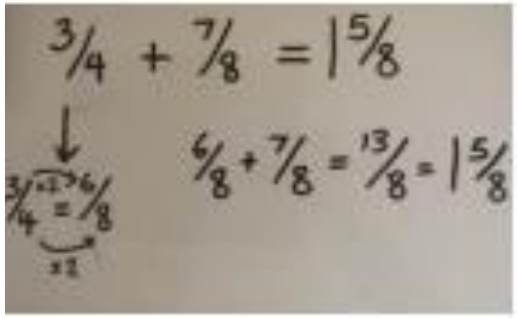
- Add and subtract fractions with the same denominator and multiples of the same number

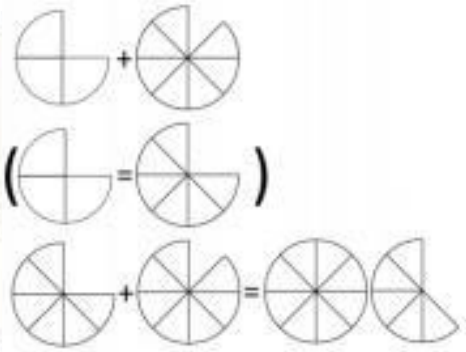




Resources	
• Fraction Action (foam magnetic fraction circles) • Decimal Action (foam magnetic decimal circles) • Percentage Action (foam magnetic percentage circles) • Fraction Tower (interlocking cubes with fractions on) • Numicon • 'Part-Part Whole' mats • Cuisenaire • Number lines • Playdoh • Place value counters (whole numbers as well as decimals)	**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. 2/5 + 4/5 =6/5 = 11/5)    **Year 6** • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions  







NB – only move onto the abstract and written forms when the concrete is secure.

RUDYARD KIPLING PROGRESSION IN FRACTIONS (including Decimals and Percentages)

Vocabulary

Whole
Equal parts
Four equal parts
One half
Two halves
A quarter
Two quarters
Three quarters
One third, a third
Equivalence,
Equivalent

Numerator
Denominator
Unit fraction
Non unit fraction
Tenths
Proper fractions,
Improper fractions
Mixed numbers

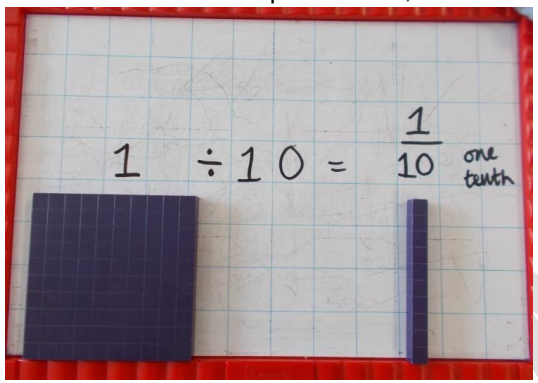
half, quarter, eighth
third, sixth, ninth,
twelfth
fifth, tenth, twentieth
hundredth,
thousandth

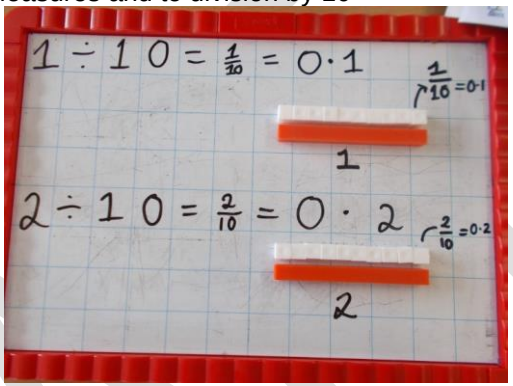
decimal, decimal
fraction
decimal point,
decimal place
percentage, per
cent, %

Multiplication and Division of Fractions (see Multiplication and Division policy for vocabulary)

Year 3

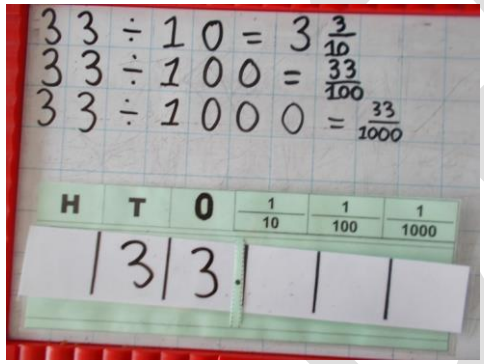
- Connect tenths to place value, decimal measures and to division by 10

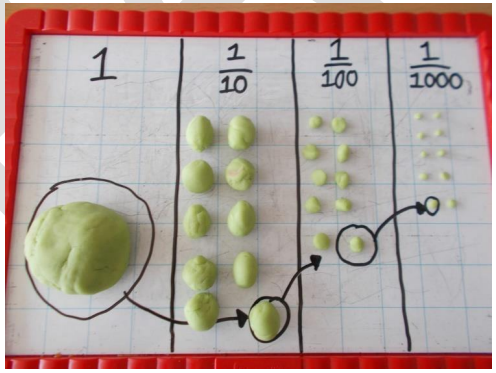


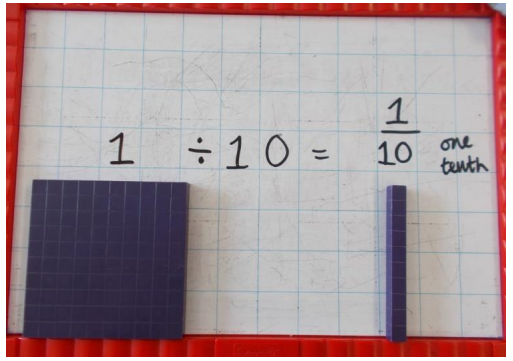


Year 4

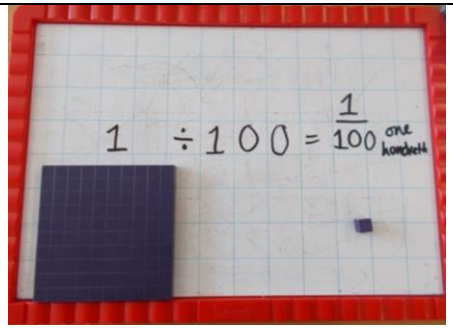
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.





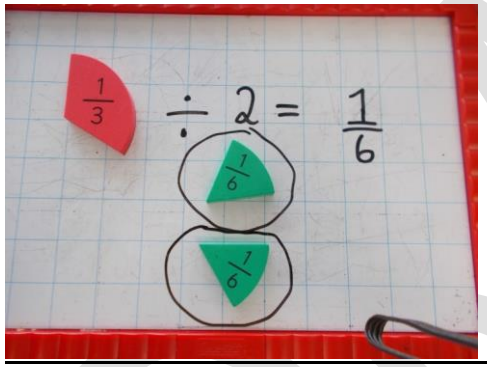


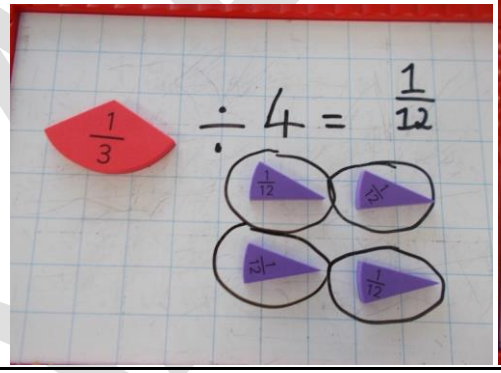
NB sliders must be taught alongside the use of diennes or place value counters to ensure place value understanding.

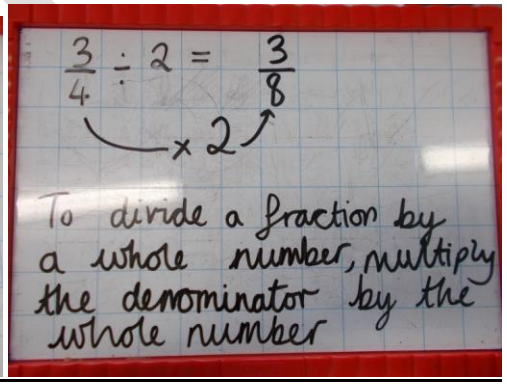


Year 5

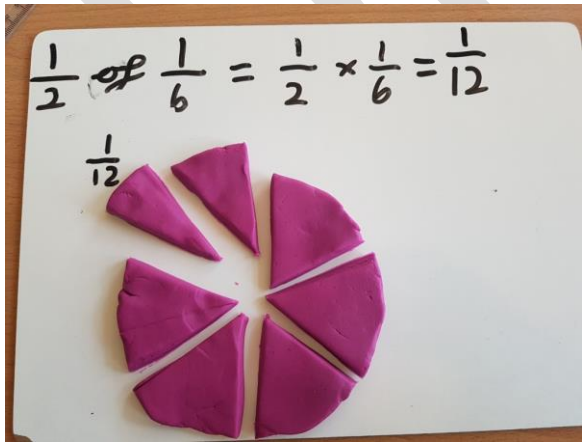
- Divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6)

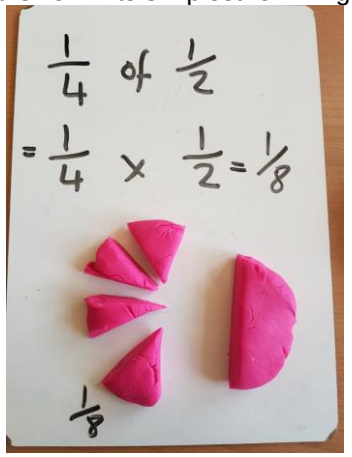






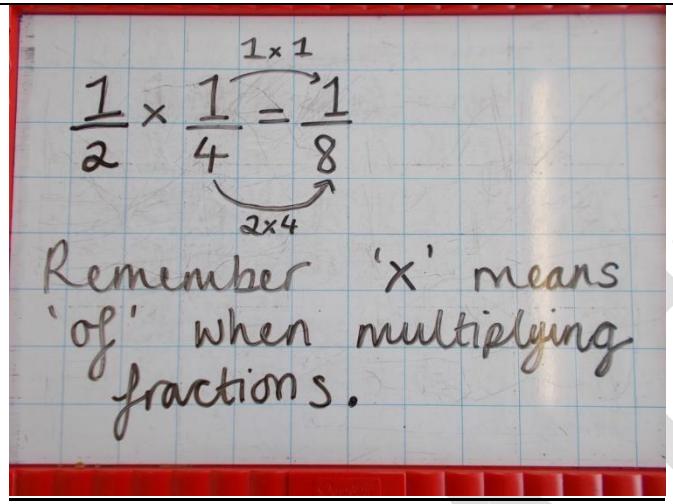
- Multiply simple pairs of proper fractions writing the answer in its simplest form E.g. ¼ x ½ = 1/8





Resources

- Fraction Action (foam magnetic fraction circles)
- Decimal Action (foam magnetic decimal circles)
- Percentage Action (foam magnetic percentage

circles) • Fraction Tower (interlocking cubes with fractions on) • Cuisenaire • Number lines • Playdoh • Place value counters (whole numbers as well as decimals) • Place value sliders	

RUDYARD KIPLING PROGRESSION IN FRACTIONS (including Decimals and Percentages)	
Vocabulary	

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Four equal parts
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Two quarters
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Denominator
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Non unit fraction
Tenths
Proper fractions, Improper fractions
Mixed numbers

half, quarter, eighth
third, sixth, ninth, twelfth
fifth, tenth, twentieth
hundredth, thousandth

decimal, decimal fraction
decimal point, decimal place
percentage, per cent, %

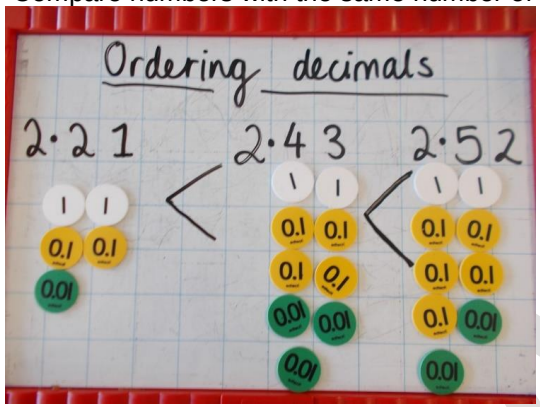
Resources

Decimals and Percentages

Comparing Decimals

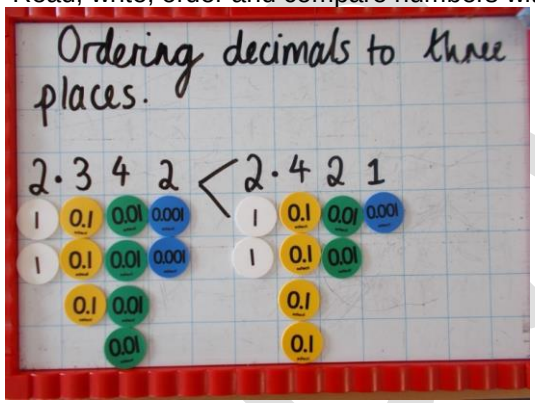
Year 4

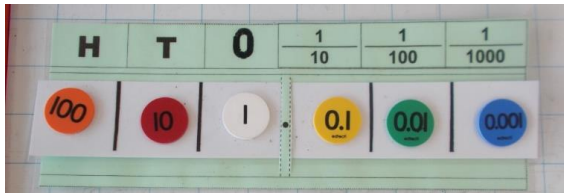
- Compare numbers with the same number of decimal places up to two decimal places

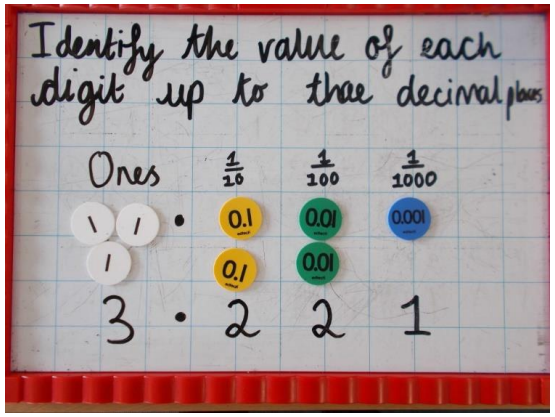


Year 5

- Read, write, order and compare numbers with up to three decimal places







Year 6

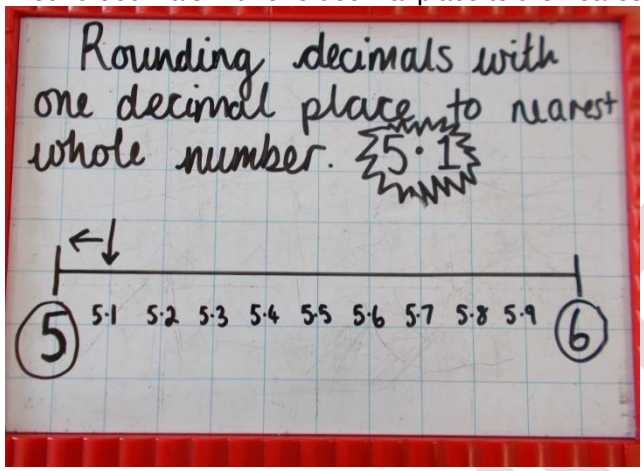
- Identify the value of each digit in numbers given to three decimal places

Rounding Decimals

- Fraction Action (foam magnetic fraction circles)
- Decimal Action (foam magnetic decimal circles)
- Percentage Action (foam magnetic percentage circles)
- Fraction Tower (interlocking cubes with fractions on)
- Cuisenaire
- Number lines
- Playdoh
- Place value counters (whole numbers as well as decimals)
- Place value sliders

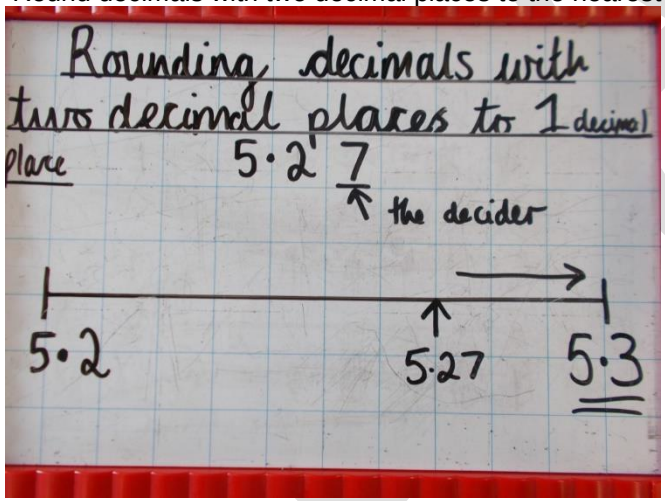
Year 4

- Round decimals with one decimal place to the nearest whole number



Year 5

- Round decimals with two decimal places to the nearest whole number and to one decimal place



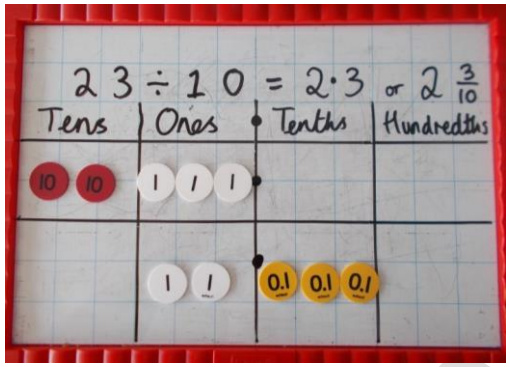
Year 6

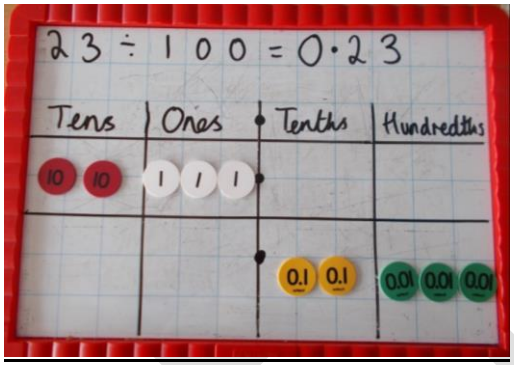
- Solve problems which require answers to be rounded to specified degrees of accuracy

Multiplication and Division of Decimals (see Multiplication and Division policy for vocabulary)

Year 4

- Multiply and divide a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths



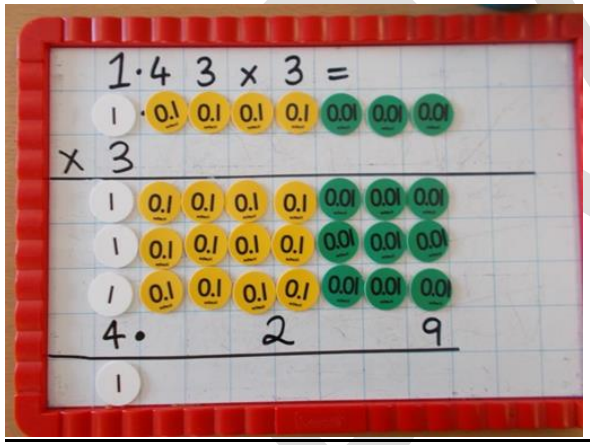


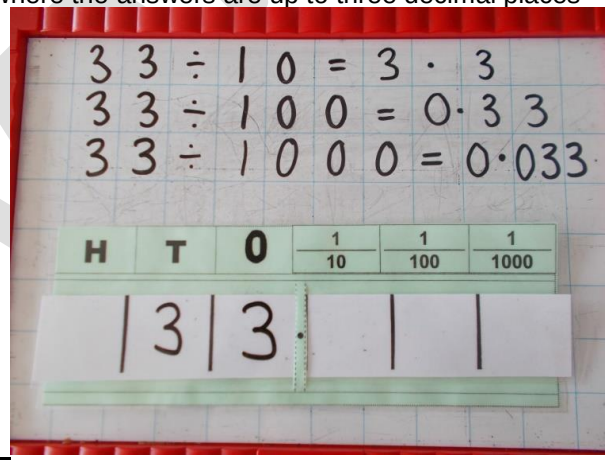
NB sliders must be taught alongside the use of diennes or place value counters to ensure place value understanding.

Year 6

- Multiply one-digit numbers with up to two decimal places by whole numbers

- Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places





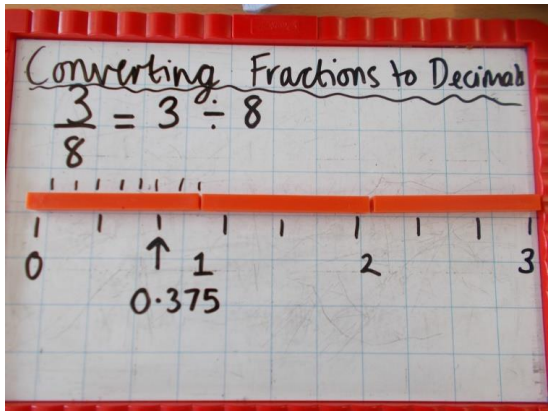
1.64

x 5

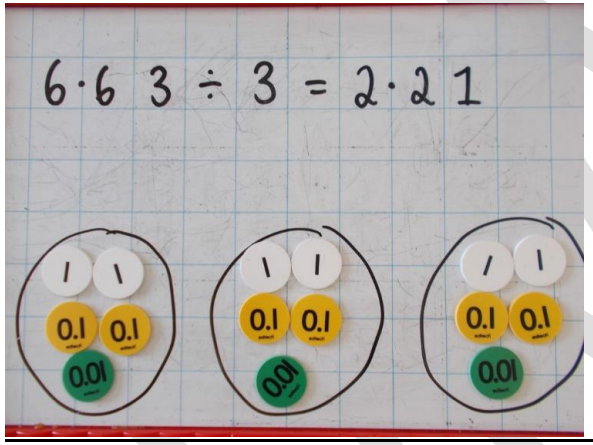
8.20

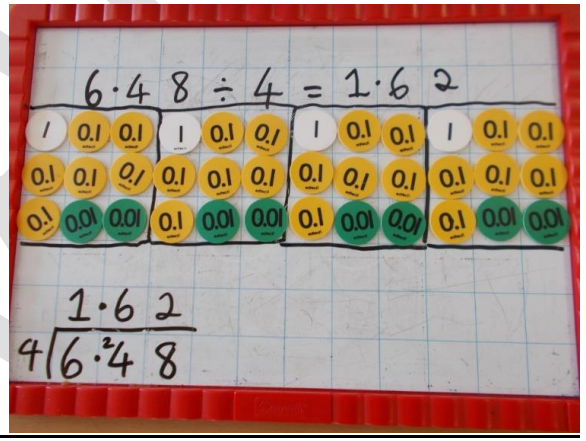
32

- Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375 = 3/8)



- Use written division methods in cases where the answer has up to two decimal places





256 ÷ 7 = 36 r 4 =
r 4 = 4/7 = 0.57