Fractions, decimals and percentages Calculation Policy

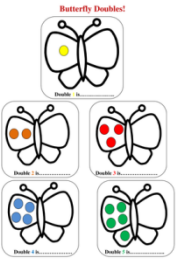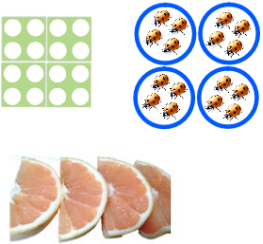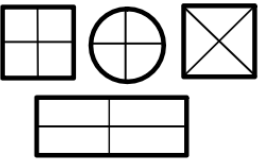Highlands Primary School
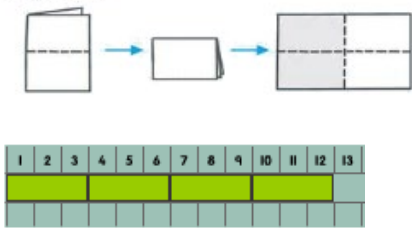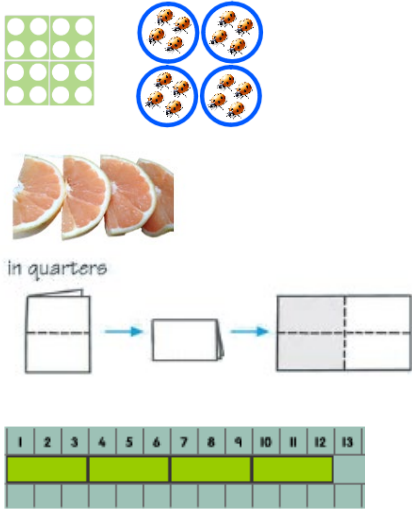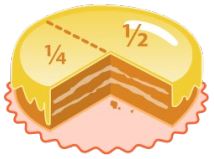
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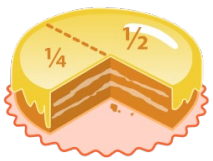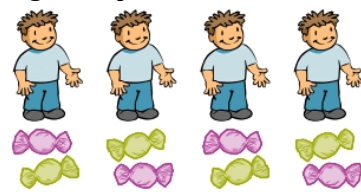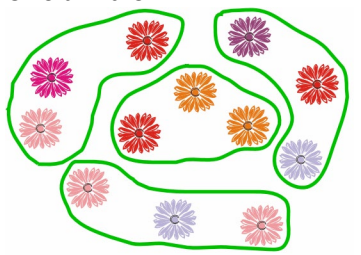
Fractions, decimals and percentages

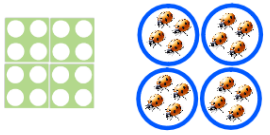| EYFS	Concrete	Pictorial	Conceptual	Using and applying
Solves problems, including doubling, halving and sharing (ELG). (Numbers)	Using objects to show double. Using objects to show half and to share.	Drawing pictures to show double and to half or 'share'.	Can I have half of your apple?	Discussions about sharing objects or halving fruit. If Megan has 3 toys and Maheen has 3 toys, how many toys do they have altogether?
Year 1	**Concrete**	**Pictorial**	**Conceptual**	**Using and applying**
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	Using familiar objects and resources. Sharing quantities into equal groups.	Using a variety of models and images	Recognise unit fraction notation: ½ and ¼	I had 8 balloons. I gave ¼ of them away. How many balloons did I give away? How many do I have left? Use the numbers 1 to 20. Which numbers can you find ½ / ¼ of? What do you notice about your answers?

Fractions, decimals and percentages

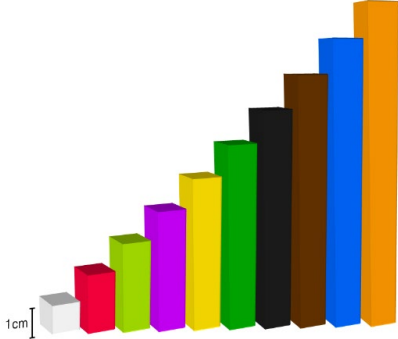|				**Possible misconceptions**
	in quarters			*-Children may think that all parts do not need to be equal.* *- Children may think the bigger the denominator the bigger the part.*
Year 2	**Concrete**	**Pictorial**	**Conceptual**	**Using and applying**
Recognise, find, name and write fractions one third , one quarter , 2 quarters and three quarters of a length, shape, set of objects or quantity.	Using familiar objects and resources. Sharing quantities into equal groups. in quarters 	Using a variety of models and images 	Recognise unit and non-unit fraction notation: ½ and ¼ 2 quarters, three quarters	I had 20 balloons. I gave one two quarters of them away. How many balloons did I give away? How many do I have left? 2/4 is the same as …? What other fractions are equivalent to 2/4?

Fractions, decimals and percentages

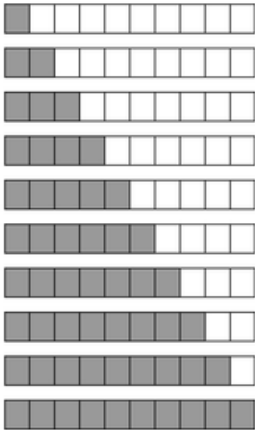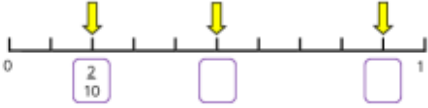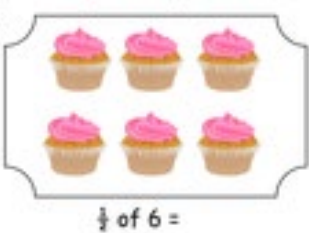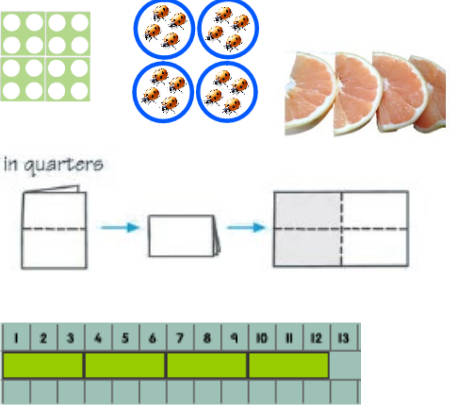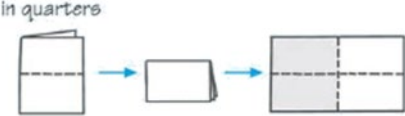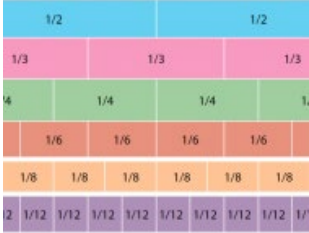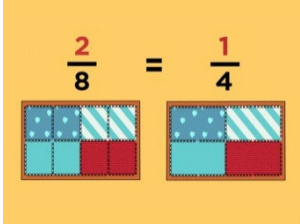| Write simple fractions for example, half of 6 = 3 and recognise the equivalence of 2 quarters and one half.	Using familiar objects and resources. Sharing quantities into equal groups.	Sharing and grouping. E.g. one quarter of 8	Find fractions of quantities:	2/4 is the same as …? What other fractions are equivalent to 2/4?
		One third of 12	½ of 20 1/3 of 18 2 quarters of 24	Jacob had 24 sweets. He gave one third to his mum, one third to his dad and he kept one third for himself. How many did they have each? Alice, Adam and Maheen have ¾ of a cake. How much of the cake is left? ***Possible misconceptions*** *-Children may think that all parts no not need to be equal.* *- Children may think the bigger the denominator the bigger the part.* *- Children may read fractions incorrectly e.g. thinking that ¼ is one part shaded, 4 parts not*

Fractions, decimals and percentages
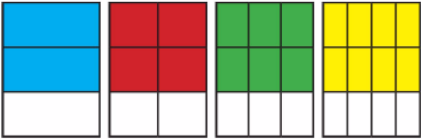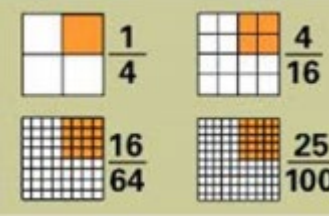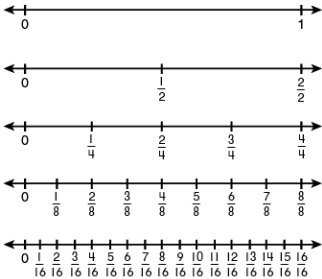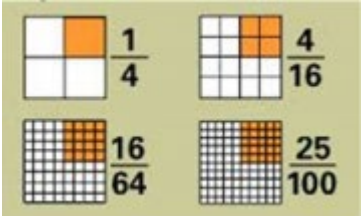
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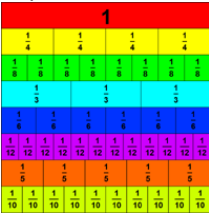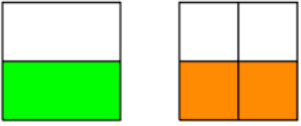| Year 3	Concrete	Pictorial	Conceptual	Using & applying
Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	Using practical resources and objects.	Structured visual images Use of number lines	Continue the pattern: 0, 1/10, 2/10, 3/10…..	 ***Possible misconceptions*** *-Children may not realise it is the denominator which stays the same and the numerator changes.* *-Children may not realise that 10 parts make a whole.*
Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	Using familiar objects and resources. Sharing quantities into equal groups.	½ of 6 = Drawing arrays to support finding fractions of objects and numbers.	¼ of 24 is 6 one fifth of 30 is 6 two fifths of 30 is 12 three quarters of 28	Ms Davies has a packet of 32 stickers. She uses three quarters of the pack at lunchtime. How many stickers does she have left? I have 7 sweets left. I have eaten ¼ of the total bag. How many sweets did I have in the beginning?
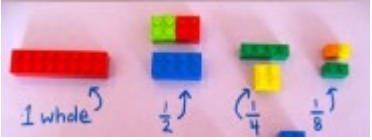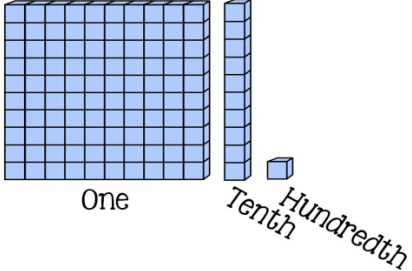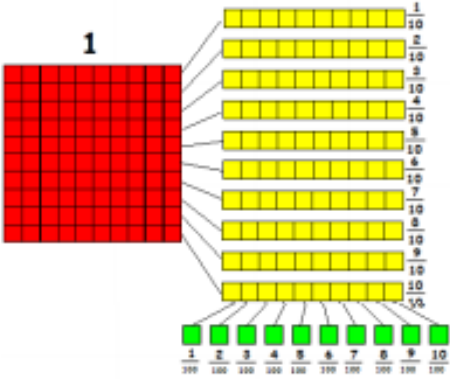
Fractions, decimals and percentages

Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators				
Recognise and show, using diagrams, equivalent fractions with small denominators	Use physical objects and resources to recognise equivalence. in quarters	Equivalence on a bar model $$\frac{2}{8} = \frac{1}{4}$$	Two quarters is the same as…?	Hassan had five eighths of a pizza. Dylan had one half of a pizza. Who had the most pizza?

Fractions, decimals and percentages

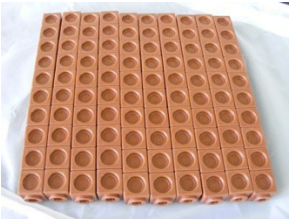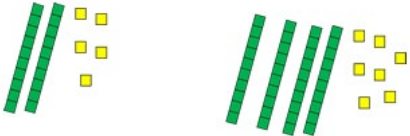| Year 4	Concrete	Pictorial	Conceptual	Using and applying
Recognise and show, using diagrams, families of common equivalent fractions	Explore fraction walls. Find different fractions of the same thing (e.g. a square or rectangle (on squared paper for ease) or a strip of paper. Match the pieces that are the same size (children can cut out pieces) $\frac{1}{2}$　　　$\frac{2}{4}$ $\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12}$ Using lego.	Structured visual images $\frac{1}{4}$　$\frac{4}{16}$　$\frac{16}{64}$　$\frac{25}{100}$ Use of number line: 	Find different fractions of the same number and compare which fractions give the same answer. ¼ of 8 = 2 2/4 of 8 = 4 ¾ of 8 = 6 ½ of 8 = 4 Which two match?	Which fractions are equivalent? How do you know? Can you show me that one quarter is equivalent to four sixteenths? $\frac{1}{4}$　$\frac{4}{16}$　$\frac{16}{64}$　$\frac{25}{100}$ How are these the same? How are they different? ***Possible misconceptions*** *-Children may not be able to represent fractions pictorially.* *-Children may think that the larger the denominator, the larger the fraction.* *-Children may not realise the importance of finding the unit fraction before moving on to find the non-unit fraction.*

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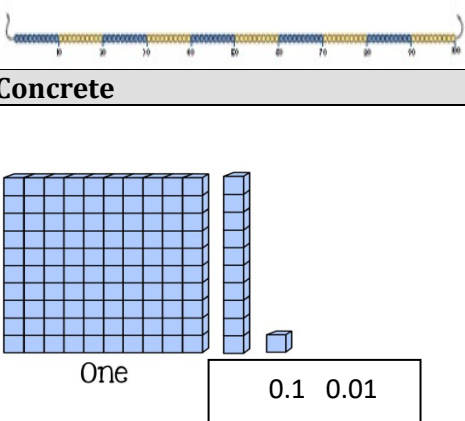
	 1 whole, ½, (¼), ⅛			*-Children struggle to use different representations to show a fraction.*
Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	Use Dienes equipment. One Tenth Hundredth 'Blow up' Dienes so: Flat = 1, Long = 1/10 = 0.1 and Unit = 1/100 = 0.01 What fraction is each piece? How many hundredths make one 1/10? How many hundredths make one whole?	Place value chart.	1 ÷ 100 = 1/100 2 ÷ 100 = 2/100 3 ÷ 10 = 3/10 27 ÷ 100 = 27/100	**What do you notice?** 1/10 of 100 = 10 1/100 of 100 = 1 2/10 of 100 = 20 2/100 of 100 = 2 How can you use this to work out 6/10 of 200? 6/100 of 200? ***Possible misconceptions*** *-Children may think that the larger the denominator, the larger the fraction.* *-Children may not make the relationship between 1/10 and 10/100.*
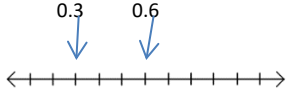
Fractions, decimals and percentages
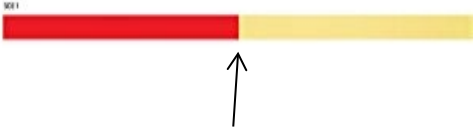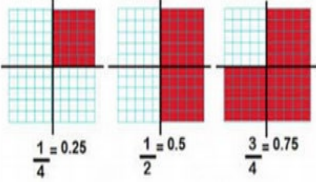
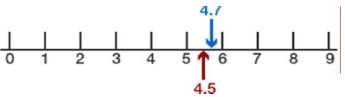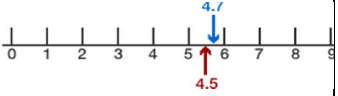|				
	Multilink can also be used where children physically break up the unit.			
Count up and down in hundredths.	Review counting in tenths before moving onto hundredths. Using the dienes rods, where 1 flat = 1 whole, 1 rod = 1 tenth. 1 unit = 1 hundred – children to physically move a unit piece and count in hundredth. Children to then recognise that 1 rod is the same as 10/100. If the start from 25/100 children to then add 1 unit rod whilst counting in hundredth. Use beads string to count up in 10th and 100ths.	Structured visual images Use of number lines	Continue the pattern: 0, 22/100, 23/100, 24/100, 25/100….. Count in hundredths from zero, then from any whole number, any hundredth and then any number (e.g. 2 and a half, 2 and 51 hundredths…) Which is greatest: one tenth or one hundredth?	**Spot the mistake** sixty tenths, seventy tenths, eighty tenths, ninety tenths, twenty tenths … and correct it. **What comes next?** 83/100, 82/100, 81/100, ….., ….., ….. *Possible misconceptions* *-Children may not realise when counting up, denominator stays the same and the numerator changes.* *-Children may not realise that 100 parts make a whole. Children may not recognise that 1/10 is bigger than 1/100*

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Year 4	Concrete	Pictorial	Conceptual	Using and applying
Recognise and write decimal equivalents of any number of tenths or hundredths.	One 0.1 0.01	$\frac{1}{0.10}$ $\frac{1}{100}$ 0.1 = 1/10 0.2 = 2/10 0.01 = 1/100		**Complete the pattern by filling in the blank cells in this table:** **Another and another** Write a decimal numbers (to one decimal place) which lies between a half and three quarters? … and another, … and another, *Possible misconceptions* *Children may not recognise the bigger the denominator the smaller the parts.* *Children may think that 0.01 is bigger than 0.1.*

Table referenced in "Using and applying":

$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$	
$\frac{10}{100}$	$\frac{20}{100}$		$\frac{40}{100}$
0.1		0.3	
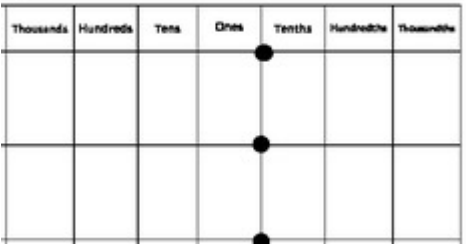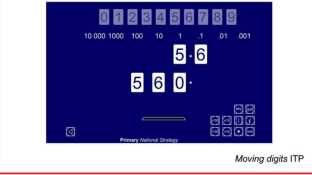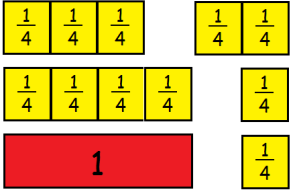
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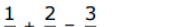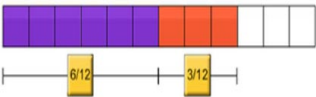| Recognise and write decimal equivalents to ¼ , ½ , ¾ | Use a counting stick marked in divisions of 0.5 to familiarise children with counting forwards and backwards in steps of 0.5 (link to counting forwards and backwards in ½).

What fraction does this present?

 | Use 10x10 grids and establish each square is one hundredth (o.01). Find fractions of the square (100) and use it to write decimal equivalents.

$\frac{1}{4} = 0.25$ $\frac{1}{2} = 0.5$ $\frac{3}{4} = 0.75$ | Continue the pattern –

0.25, 0.5, 0.75, 1, 1.25, 1.5…..

Counting on the counting stick in ¼ and 0.25.

Missing numbers. | **Ordering**

Put these numbers in the correct order, starting with the smallest.
¼   0.75   5/10
Explain your thinking
Possible misconceptions
Children ½ is the same as 5/10 which is the same as 0.5.
Children may not recognise that 0.25 is half of 0.5. |
| Compare numbers with the same number of decimal places up to two decimal places. | Help children become aware of the relative size of decimal numbers by ordering a set of amounts of money or lengths.

£1.23

£1.03

 | Position decimals on a number line for children to get a sense of size.

0.3   0.6
 | Put these numbers in descending order:

1.23, 1.03, 1.31, 1.32, 1.02

Include numbers to overcome misconceptions such as mistaking the length of the number with its size, for example thinking that 4.05 is larger than 4.5. | **Missing symbol**
Put the correct symbol < or > in each box
3.03 ☐ 3.33

0.37 ☐ 0.32

What needs to be added to 3.23 to give 3.53?
What needs to be added to 3.16 to give 3.2?

Which is the larger amount, £0.75 or 90p? Which is longer, 3.06 m or 3.6 m? Which is larger: 239p or £2.93? Why?

Possible misconceptions |

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				Children may think that 0.09 is bigger than 0.2 because '9' is larger than '2'.
Round decimals with one decimal place to the nearest whole number	Present children with a number line and digit cards (whole numbers). 4.7 0 1 2 3 4 5 6 7 8 9 4.5 Call out a number – children to hold up the digit cards the number is closest to.	Children to place digits on a number line, draw how many jumps to the whole numbers either side. 4.7 0 1 2 3 4 5 6 7 8 9 4.5	1.7 → 2 2.5 → 3 1.4 → 1 8.2 → 8	What is 4.7 rounded to the nearest whole number? I rounded my number to 3. What number (with one decimal place) could it have been? What is the biggest/smallest number I would round to 2? Simon rounded 1.6 to 2. Was he right? Explain how you know. Show me why I would round 2.3 to 2. My chair is nearly 1 m high. How tall could it be? **Do, then explain** Circle each decimal which when rounded to the nearest whole number is 5. 5.3 5.7 5.2 5.8 Explain your reasoning ***Possible misconception*** *-Children may find the next multiple instead of the closest multiple.*
Find the effect of dividing	Use place value grids.	ITP	Create numbers and look at effect of dividing by 10 and 100. Explore the visual	What is … ÷ 10/÷ 100 ? How do you know? Can you show me? How to divide by ten? What mistake Have I made here?

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a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	**PLACE VALUE CHART**	*Moving digits ITP*	pattern of the digits within division. 400 ÷ 100 = 4 | 400 ÷ 10 = 40 40 ÷ 10 = 4 | 40 ÷ 10 = 4 4 ÷ 1 = 4 | 4 ÷ 10 = 0.4 0.4 ÷ 0.1 = 4 | 0.4 ÷ 10 = 0.04	***Possible misconceptions*** *-Children may not be secure with what way to move the digits on the place value chart.* *-When dividing or multiplying a number with a 0 in between other digits i.e. 403, children may remove the 0.*
Add and subtract fractions with the same denominator	Use fraction cards to model the process. Using lego: Numicon $\frac{2}{9} + \frac{6}{9} = \frac{8}{9}$	$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$ $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$ $\frac{6}{12} + \frac{3}{12} = \frac{9}{12}$ 	$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$ $\frac{6}{12} + \frac{3}{12} = \frac{9}{12}$	**What do you notice?** $\frac{5}{5} - \frac{1}{5} = \frac{4}{5}$ $\frac{4}{5} - \frac{1}{5} = \frac{3}{5}$ **Continue the pattern** ***Possible misconceptions*** *-Children may not be secure in understanding why the denominators doesn't change resulting in them adding or subtracting them.*

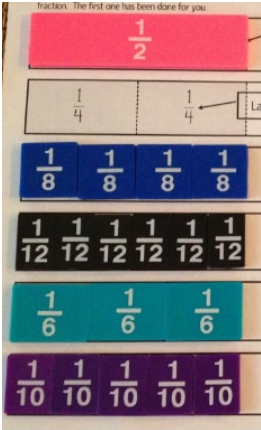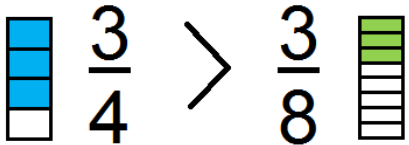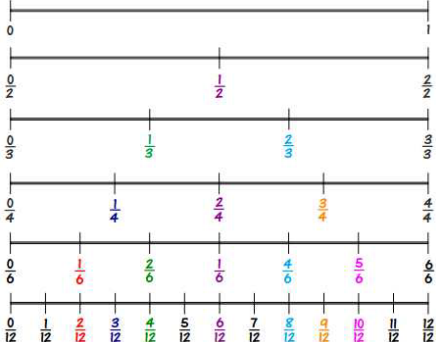# Fractions, decimals and percentages

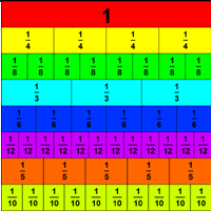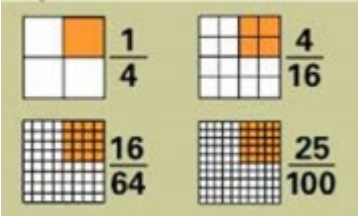|				
	$$\frac{6}{6} - \frac{2}{6} = \frac{4}{6}$$			

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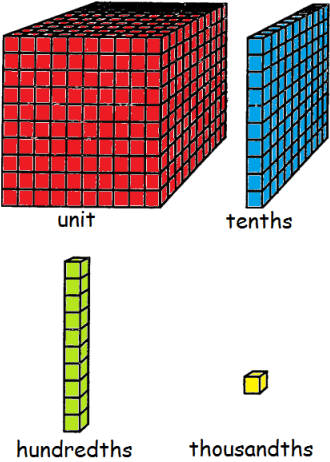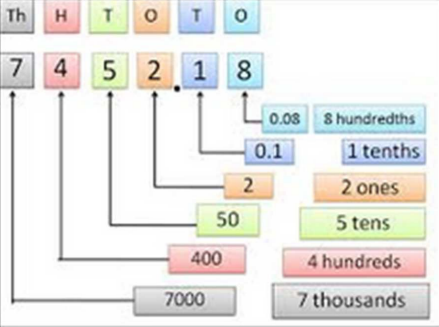
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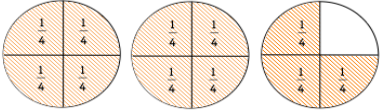
Year 5	Concrete	Pictorial	Conceptual	Using and applying
Compare and order fractions with denomina-tors that all have multiples of the same number.	Use fraction cards or a fraction wall to physically compare the sizes of fractions. Make links between the fraction sign and division. Use a calculator to perform the division and compare the decimal numbers, then relate them to the original fraction.	Draw objects which are the same size to compare. $\dfrac{3}{4} > \dfrac{3}{8}$ Use of number line to compare fractions.	Use knowledge of simplifying and finding a common denominator to compare fractions with denominators that all have multiples of the same number.	Give an example of a fraction that is more than three quarters. Now another example that no one else will think of. Explain how you know the fraction is more than three quarters. ***Possible misconceptions*** *-Children may not be secure in finding equivalent fractions.* *Children may not find the lowest common denominator resulting in them working in efficiently.*
Identify, name and write	Use various models and images to represent fractions in different ways.	Use of fraction wall to find equivalence	Investigate using multiplication and division to create equivalent fractions and to	**Odd one out.** Which is the odd one out in each of these collections of 4 fractions:

Fractions, decimals and percentages

| equivalent fractions of a given fraction, represented visually, including tenths and hundredths | | | simplify fractions to find simplest equivalent. | $\dfrac{6}{10}$ $\dfrac{3}{5}$ $\dfrac{18}{20}$ $\dfrac{9}{15}$

$\dfrac{30}{100}$ $\dfrac{3}{10}$ $\dfrac{6}{20}$ $\dfrac{3}{9}$

Why?

Possible misconceptions
-Although children may be able to find equivalent fractions, they may not fully understand they represent the same the size of a given value – lots of practical example will support their understanding of equivalent fractions.
-Children may struggle to recognise common multiples.
-Children may struggle to visualise when two fractions are equivalent. |
|---|---|---|---|---|

Fractions, decimals and percentages

Year 5	Concrete	Pictorial	Conceptual	Using and applying
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Blow up' dienes so 1 cube represents 1 whole, and therefore unit cubes represent one thousandths. unit tenths hundredths thousandths	 Th H T O T O 7 4 5 2 1 8 0.08 8 hundredths 0.1 1 tenths 2 2 ones 50 5 tens 400 4 hundreds 7000 7 thousands	Symbols: $1 \div 10, 1 \div 100, 1 \div 1000$ $$\frac{1}{10} \quad \frac{1}{100} \quad \frac{1}{1000}$$ 3.652 = 'three point six five = three units, six tenths, 5 hundredths and 2 thousandths = 3652 thousandths	How would you read this number 1.234? What is the place value of each digit? How many units are there? How many tenths? How many hundredths? How many thousandths? ***Possible misconceptions*** *-Children may not recognise that 1/100 is bigger than 1/1000.* *-Children may not make the relationship between 1/100 and 10/1000.* *-Children may think that 0.001 is bigger than 0.1 because it has more digits.*
Recognise mixed numbers and improper fractions and convert from one form to the other.	1 or ¼ 1 ¼ or $\frac{5}{4}$ 1 $\frac{1}{2}$ or ¼	How many quarters are there in 2 and ¾? $2 \underline{1} = \underline{7}$	$$\frac{7}{3} = 2\frac{1}{3}$$ How many groups of 3 are there in 7? What us the remainder? Or 7 ÷ 3 = 2 r 1	Tell me a fraction that is bigger than 3. How else could we write it? Show me what eight thirds looks like. What is equivalent to it? How can you prove it?

Fractions, decimals and percentages

| | How many quarters make a whole?

Use knowledge of counting to mark numbers on number lines.

Numicon stack

With the whole as ten, each peg represents 1/10 . Children can then stack up the numicon to show any improper fractions. For example, the picture above shows 1 3/10 or 13/10 | 3   3 | 3 | *Possible misconceptions*
-*Children may not consider that a fraction can be larger than a whole.*
- Children may think that mixed numbers are larger than improper fractions. |

Fractions, decimals and percentages

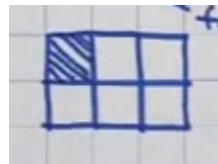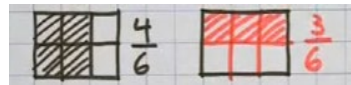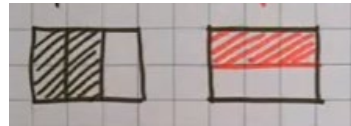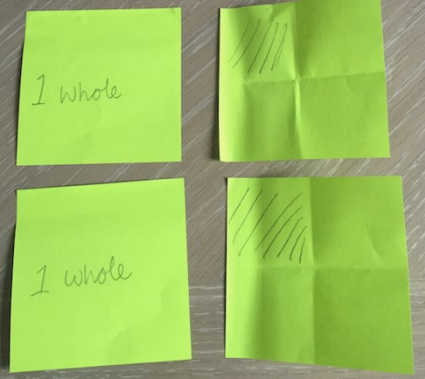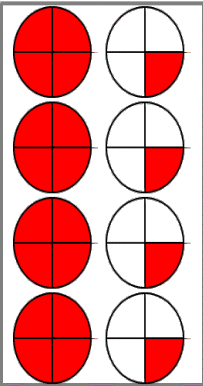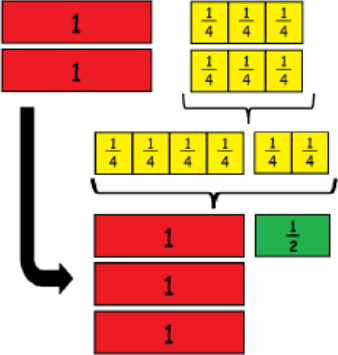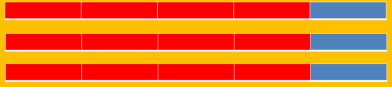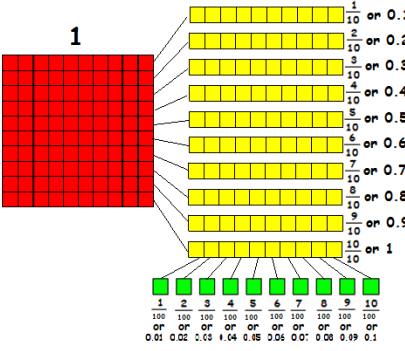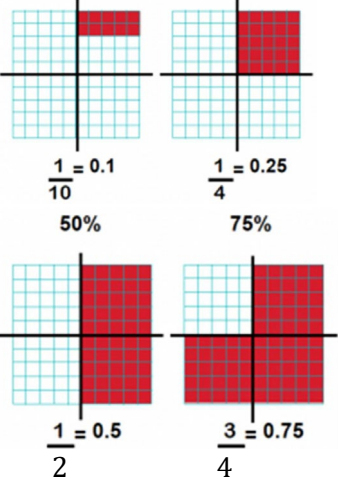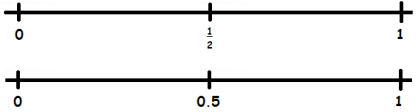| Add and subtract fractions with the same denominator and denominators that are multiples of the same number and write mathematical statements > 1 as a mixed number [e.g. ⅖ + ⅘ = 6/5 = 1 ⅕] | | ADDING FRACTIONS

$\frac{1}{4}$ + $\frac{2}{3}$
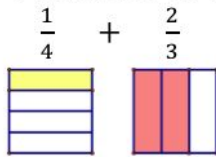
$\frac{3}{12}$ + $\frac{8}{12}$ = $\frac{11}{12}$

Subtracting fractions

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

Answer = $\frac{1}{6}$ | $\frac{1}{3}$ + $\frac{1}{5}$

× 5   × 3

$\frac{1}{3}$ = $\frac{5}{15}$ $\frac{1}{5}$ = $\frac{3}{15}$
+
× 5   × 3

$\frac{5}{15}$ + $\frac{3}{15}$ = $\frac{8}{15}$ | **What do you notice?**
¾ and ¼ = 4/4 = 1

$\frac{4}{4}$ and ¼ =4 = 1 ¼ $\frac{5}{5}$

$\frac{5}{5}$ and ¼ = 4 = 1 ½ $\frac{6}{6}$

Continue the pattern up to the total of 2.

Can you make up a similar pattern for subtraction?

Possible misconceptions
-Children may add the denominators and numerators.

-Children may not use the lowest common multiple to convert the denominator. |
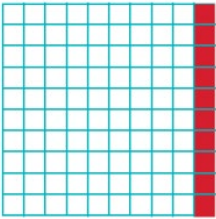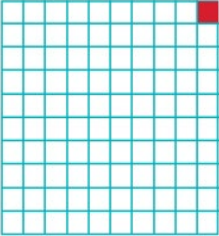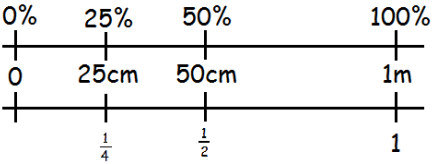
Fractions, decimals and percentages

Year 5	Concrete	Pictorial	Conceptual	Using and applying
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	Use post it notes to multiply $1\frac{1}{4} \times 2 =$ *1 whole* *1 whole*	 4 wholes and 4 quarters = 5 $1\frac{1}{4} \times 4 =$ **Images:** $1\frac{1}{4} \times 2$ $3 \times \frac{4}{5} =$	$1\frac{1}{4} \times 4 =$ $\frac{5}{4} \times \frac{4}{1} = \frac{20}{4} = 5$	**Continue the pattern** ¼ x 3 = ¼ x 4 = ¼ x 5 = Continue the pattern for five more number sentences. How many steps will it take to get to 3?

Fractions, decimals and percentages

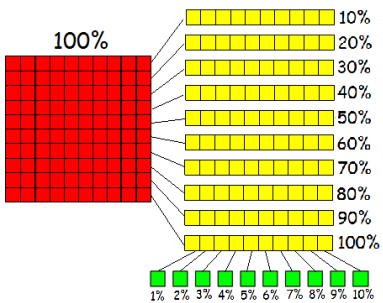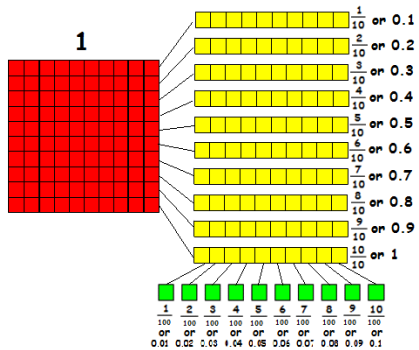|		$\dfrac{12}{5} = 2\dfrac{2}{5}$		
Read and write decimal numbers as fractions [for example, 0.71 = 71/100]	Use Dienes to represent decimals numbers and compare to Dienes as fractions. Numicon With the whole as ten, each peg represents 1/10 (0.1). Children can then stack up the numicon to show any decimal number. For example the picture above shows 1.3 or 1 3/10 or 13/10.	 $\dfrac{1}{10} = 0.1$ 50% $\dfrac{1}{4} = 0.25$ 75% $\dfrac{1}{2} = 0.5$ $\dfrac{3}{4} = 0.75$ Number line 	$\dfrac{71}{100}$ = 71 ÷ 100 Use place value chart to show this represents 0.71.	**Odd one out.** Which is the odd one out in each of these collections of 4 fractions 6/10 3/5 18/20 9/15 30/100 3/10 6/20 3/9 Why? **What do you notice?** Find 30/100 of 200 Find 3/10 of 200 What do you notice? Can you write any other similar statements? ***Possible misconceptions*** *-Children may not recognise that 1/100 is bigger than 1/1000.* *-Children may not make the relationship between 1/10 0and 10/1000.* *-Children may think that 0.01 is bigger than 0.1 because it has more digits.* *Children may not make the link between place value and fractions.*

Fractions, decimals and percentages

| 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, and as a decimal. | Using the bead bar. Use the bead bar to discuss how many 10% we can get out of 100%.

How many parts out of the 10 does 10%/20%/30% represent?

How can we write that as a fraction?

Using money. Use money to show how 10p can be expressed as a percentage and a fraction of £1. Give children the opportunity to use coins to convince themselves that, for example, 10p is 1/10 or 10% of £1 because they need ten 10p coins to make £1. | Represent percentage pictorially on a 100 square.

$10\% = \dfrac{1}{10} = 0.5$

$1\% = \dfrac{1}{100}$

Images of everyday objects:

$\dfrac{1}{2} = 50\% = 0.5$ | Percentage is a fraction out of 100.

$1\% = \dfrac{1}{100} = 0.01$

$70\% = \dfrac{70}{100} = 0.7$ | How can you model a percentage?

Ordering
Put these numbers in the correct order, starting with the largest.
7/10, 0.73, 7/100, 0.073 71%
Explain your thinking

Which is more:
20% of 200 or 25% of 180? Explain your reasoning.

Possible misconceptions
-Children may not make the link between fractions percentages.
-Children may not be able to find equivalent fractions to make the denominator out of 100. |
| Understand and use the equivalence between percentages, fractions | Counting stick to see the equivalence between the numbers.

 | Using a number line

 | Use equivalence to represent fraction as part of 100. Use place value chart to show how $25 \div 100 = 0.25$

$1 = \dfrac{25}{} = 25\% = 0.25$ | Fill in the missing numbers in the Grid |

Fractions, decimals and percentages

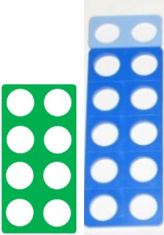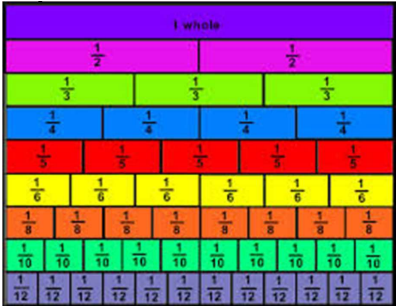|				
and decimals (e.g. 100% is a whole quantity and 1% is 1/100, 50% of 100 is 50) and relate this to finding 'fractions of' to solve problems.	Find 50% of a metre. How many cm is this? How could this be written as a fraction? Use dienes to represent whole as 1 or 100% 		4 100	 Fraction Decimal Percent $\frac{}{100}$. % How do you know that 50% is the same as a half? How can you show me?
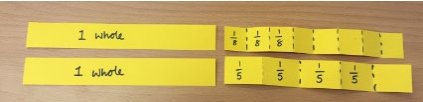
Fractions, decimals and percentages

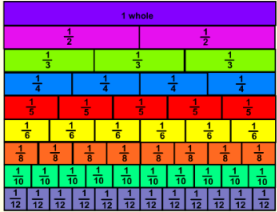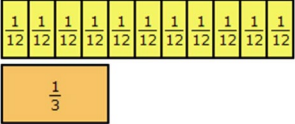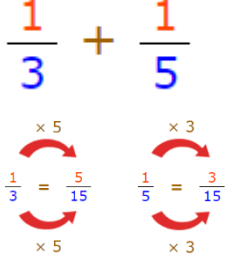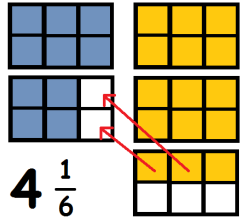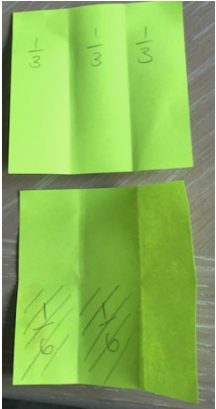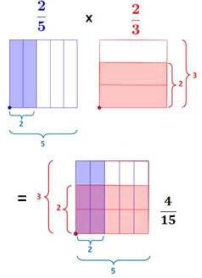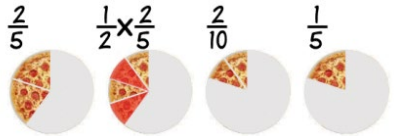| Year 6	Concrete	Pictorial	Conceptual	Using and applying
Use common factors to simplify fractions; use common multiples to express fractions in the same denomination .	Numicon to find common factors. $\dfrac{8}{12} = \dfrac{2}{3}$	Use fraction wall to show equivalence of: $\dfrac{8}{12} = \dfrac{2}{3}$	Model dividing numerator and denomiator bu the same number: $\dfrac{8 \ (\div 4)}{12 \ (\div 4)} = \dfrac{2}{3}$	What is the missing number? $\dfrac{7}{10} = \dfrac{\square}{30}$ How do you know? Tell me a fraction that is equivalent to ½ but has a denominator of 9. How did you do it? Find the missing number: $\dfrac{3}{\square} = \dfrac{12}{16}$ Karen makes a fraction using two number cards. She says, 'My fraction is equivalent to ½ . One of the number cards is 6' ***Possible misconceptions*** *-Children may not recognise the lowest common denominator.*

Fractions, decimals and percentages

Compare and order fractions, including fractions > 1	Using strips of paper: Which is greater 2 $\frac{4}{5}$ or 2 $\frac{3}{8}$? Which is greater $\frac{5}{4}$ or 1 $\frac{1}{2}$? 	Which is greater? $\frac{5}{4}$ 1 $\frac{1}{2}$ 	Find a common denominator: $\frac{5}{4}$ 1 $\frac{1}{2}$ = 1 $\frac{2}{4}$ Convert both into a mixed number or improper fraction.	Give an example of a **fraction** that is greater than 1.1 and less than 1.5. Now another example that no one will think of. Explain how you know. ***Possible misconceptions*** *-Children may not recognise that fraction can be more than one whole.* *-Children may think the larger the denominator, the larger the part.* *-Children may not recognise the lowest common denominator.*
Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions	Use fraction wall cards : $\frac{11}{12}$ - $\frac{1}{3}$ = 	Bar modelling: $\frac{11}{12} - \frac{1}{3} = ?$ Find a common denominator:	 $\frac{5}{15}$ + $\frac{3}{15}$ = $\frac{8}{15}$	Of the flags in Jackie's Flag Shop, 3/5 are green and another 1/5 are teal. What fraction of the flags are either green or teal? Sadie's milkshake recipe needs 3/4 of a scoop of ice cream and Robbie's recipe needs for 1/4 of a scoop.

Fractions, decimals and percentages

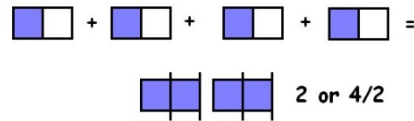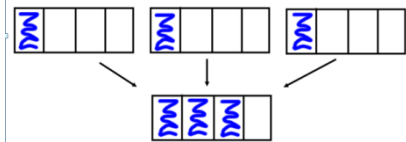|				
		$1\frac{2}{3} + 2\frac{1}{2}$ Use denominators to draw grids (in this case 2 x 3) that represent units. $4\frac{1}{6}$		How many more scoops of ice cream are used in Sadie's recipe than in Robbie's recipe?
Multiply simple pairs of proper fractions, writing the answer in its simplest form.	Use post it notes (or cut up paper grids) to model the process of multiplying fractions. $\frac{2}{3} \times \frac{1}{2} = \frac{2}{6}$ 	Draw grids to multiply, emphasise use of 'of' in place of x. $\frac{1}{2} \times \frac{2}{5} =$ 	$\frac{1}{2} \times \frac{2}{5} = \frac{1 \times 2}{2 \times 5} = \frac{2}{10}$	The answer is 1/8 , what is the question (involving fractions / operations) ***Possible misconceptions*** *-children may learn rule and not understand what the mathematics looks like.*

Fractions, decimals and percentages

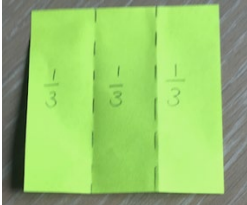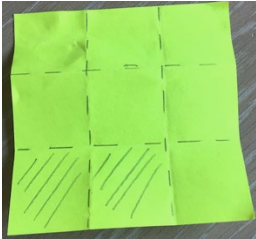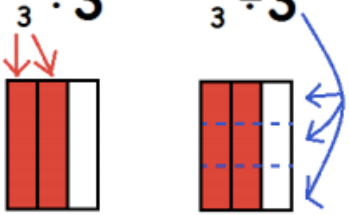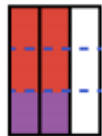| | | Fraction multiplied by a whole number:

Link multiplication to repeated addition.

4 x 1/2 or
1/2 + 1/2 + 1/2 + 1/2

$\frac{1}{4}$ x 3 = $\frac{3}{4}$ | | |

Fractions, decimals and percentages

| Divide proper fractions by whole numbers | Use post it notes (or cut up paper grids) to model the process of dividing fractions.

$\dfrac{2}{3} \div 3 = \dfrac{2}{9}$

 | $\dfrac{2}{3} \div 3 \qquad \dfrac{2}{3} \div 3$

$\dfrac{2}{3} \div 3 = \dfrac{2}{9}$

 | $\dfrac{2}{3} \div 3 =$

Discuss that dividing by 3 is the same as multiplying by $\dfrac{1}{3}$.

$\dfrac{2}{3} \div 3 = \dfrac{2}{3} \times \dfrac{1}{3}$

$\dfrac{2}{3} \times \dfrac{1}{3} = \dfrac{2}{9}$ | **Continue the pattern**
$1 \div 2 = \dfrac{1}{3} \quad \dfrac{1}{6}$
$1 \div 2 = \dfrac{1}{6} \quad \dfrac{1}{12}$
$1 \div 2 = \dfrac{1}{12} \quad \dfrac{1}{24}$

Possible misconceptions
-children may learn rule and not understand what the mathematics looks like. |