Knowledge and Progression in Fractions, decimals and percentages

Early Learning Goals	To solve problems which involve doubling, halving and sharing into equal groups To know halves of numbers to 10					
Year Group	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Recognising Fractions Counting in fraction steps	To be able to recognise and name a half as one of two equal parts of an object, shape or quantity and a quarter as 4 equal parts of an object, shape or quantity	To be able to recognise, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity To be able to count in halves and quarters up to 10	To recognise that tenths, arise from dividing an object into 10 equals parts and in dividing one-digit numbers or quantities by 10 To be able to count up and down in tenths; To be able to find 2/3 of an object or shape	To recognise that hundredths, arise when dividing an object by one hundred and dividing tenths by ten. To be able to count up and down in hundredths; To be able to count forwards and backwards in quarters and steps of 0.25	To be able to recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number To be able to count in decimals and fractions (halves, tenths, quarters, three quarters)	To be able to order fractions with different denominators, simplifying and converting to decimals where necessary
Finding fractions of quantities	To be able to find a half of an object, shape or quantity and a quarter of an object, shape or quantity	To be able to write simple fractions for example, 1/2 of 6 = 3 and To be able to find fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity	To be able to recognise, find and write fractions of quantities, shapes and lengths including tenths	To be able to solve problems involving increasingly harder fractions to calculate quantities such as 2/5 of a number or 5/8	To be able to find a fraction of a quantity using known number facts e.g. 5/12 of 60 = 60 ÷12 x 5 1/20 of 80 = 1/10 of 80 ÷2	To be able to use their understanding of the relationship between unit fractions and division to work backwards by multiplying a quantity that represents a unit fraction to find the whole quantity (for example, if 1/4 of a length is 36cm, then the whole length is 36 × 4 = 144cm).

Comparing fractions		Recognise the equivalence of 2/4 and 1/2. To be able to find equivalent fractions on a number line (1 2/4 or 1 ½)	Compare and order unit and non- unit fractions and fractions with the same denominator To be able to recognise and show, using diagrams, families of common equivalent fractions To be able to find equivalent fractions on a number line	To be able to recognise and show, using diagrams, families of common equivalent fractions To be able to simplify fractions to find equivalences 6/9 = 2/3, ¼ = 2/8.	To be able to compare and order fractions whose denominators are all multiples of the same number Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	To be able to use common factors to simplify fractions To be able to use common multiples to express fractions in the same denomination To be able to compare and order fractions, including fractions > 1
Fraction calculations			To be able to add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]	To be able to add and subtract fractions with the same denominator over one whole To be able to convert improper fractions to mixed numbers and back	To be able to add and subtract fractions with the same denominator and denominators that are multiples of the same number multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	To be able to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions To be able to multiply simple pairs of proper fractions, writing the answer in its simplest form To be able to divide proper fractions by whole numbers
Fraction problems	To be able to solve fraction problems involving 1/2	To be able to solve fraction problems involving ½, ¼, ¾, 1/3	To be able to solve fraction problems including using tenths and thirds	To be able to solve simple measure and money problems involving fractions and decimals to two decimal places	To be able to solve problems involving number up to three decimal places and fractions of amounts To be able to solve problems which require knowing, fraction and decimal equivalents of ½, ¼, ¾, 1/5, 2/5, 4/5	To be able to solve problems which require answers to be rounded to specified degrees of accuracy To be able to recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Key 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, compare and order, tenths	Equivalent decimals and fractions	Proper fractions, improper fractions, mixed numbers, percentage, half, quarter, fifth, two fifths, four fifths, ratio, proportion	Degree of accuracy, simplify
Decimals as fractional amounts				To recognise and write decimal equivalents of any number of tenths or hundredths To recognise and write decimal equivalents to ¼, ½ and ¾, 1/10, 1/5	To be able to read and write decimal numbers as fractions for tenths and hundredths	To be able to associate a fraction with division and calculate decimal fraction equivalents e.g. know that 7 divided by 21 is the same as 7/21 which is equivalent to 1/3 and that 0.375 is equivalent to 3/8

				To be able to 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		To identify the value of each digit in numbers given to three decimal places
Ordering decimals				To be able to round decimals with one decimal place to the nearest whole number To be able to compare and order numbers with the same number of decimal places up to two decimal places	To recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents To round decimals with two decimal places to the nearest whole number and to one decimal place To read, write, order and compare numbers with up to three decimal places	
Calculating with decimals		To be able to muktiply and divide a 1 or 2 digit whole number by 10	To be able to multiply and divide a decimal or a whole number by 10	To be able to multiply and divide numbers by 10, 100 To be able to add and subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 e.g. 0.83+0.17	To be able to multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places To be able to multiply and divide one-digit numbers with up to two decimal places by whole numbers To be able to use written division methods in cases where the answer has up to two decimal places	
Key Vocabulary			Tenths, decimal point	Tenths, hundredths	Proper fractions, improper fractions, mixed numbers, percentage, fifth, two fifths, three fifths, four fifths, ratio, proportion, thousandths	Degree of accuracy, simplify
Percentages					To be able to 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 To be able to solve problems which require knowing	To be able to solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

					percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator or a multiple of 10 or 25	