PARKFIELD SCHOOL
felicitas per ardua

Number: Fractions, Decimals and Percentages

National Centre for Excellence in the Teaching of Mathematics

COUNTING FRACTIONS, DECIMALS AND PERCENTAGES						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Count up and down in quarters	• 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	• To count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	• *To extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line.* • *To continue to practise counting forwards and backwards in simple fractions.*	
RECOGNISNG, FINDING AND NAMING FRACTIONS						
• **ELG**: Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	• *To be familiar with vocabulary associated with fractions:* • *Part, whole, quarter, half, equal part, sharing, double*	• 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 • recognise, find, name and write fractions ⅓, 1 /4, 2/4 and ¾ of a length, shape, set of objects or quantity • write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½	• recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators *as numbers on the number line (going beyond 0 -1 and relating this to measure), and deduce relations between them, such as size and equivalence.*	• *To make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities.* • *To know that decimals and fractions are different ways of expressing numbers and proportions.* • *To understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths.*	• To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	

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COMPARING AND ORDERING FRACTIONS						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		recognise the equivalence of 2/4 and ½	• recognise and show, using diagrams, equivalent fractions with small denominators	Compare and order mixed numbers	• To compare and order fractions whose denominators are all multiples of the same number.	• To compare and order fractions, including fractions > 1.
ADDING AND SUBTRACTING FRACTIONS						
		Know that ½ + ½ =1 and ¼+¼+¼+¼=1	• add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7 -compare and order unit fractions, and fractions with the same denominators - solve problems that involve all of the above.	• To add and subtract fractions with the same denominator *to become fluent through a variety of increasingly complex problems beyond one whole.*	•To add and subtract fractions with the same denominator & denominators that are multiples of the same number *to become fluent through a variety of increasingly complex problems.* •To recognise mixed numbers & improper fractions and convert from one form to the other & write mathematical statements > 1 as a mixed number.	• To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions *starting with fractions where the denominator of one fraction is a multiple of the other and progress to varied and increasingly complex problems.*
MULTIPLYING AND DIVIDING FRACTIONS						
					• *To continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities.* • To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	• To multiply simple pairs of proper fractions, writing the answer in its simplest form *using a variety of images to support their understanding of multiplication with fractions.* • To divide proper fractions by whole numbers.

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EQUIVALENCE OF FDP						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		To write simple fractions for example, ½ of 6 = 3 and recognise the equivalence 2/4 and1/2.	To recognise and show, using diagrams, equivalent fractions with small denominators.	• To use factors and multiples to recognise equivalent fractions and simplify where appropriate. • To recognise and show, using diagrams, families of common equivalent fractions. • To recognise and write decimal equivalents of any number of tenths or hundredths. • To recognise and write decimal equivalents to $\frac{11}{44}$, $\frac{11}{22}$, $\frac{33}{44}$. • Convert mixed to improper fractions	• To read and write decimal numbers as fractions. • To recognise and use thousandths and relate them to tenths, hundredths, decimal equivalents *and measures*. • 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 recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. • To use common factors to simplify fractions; use common multiples to express fractions in the same denomination.

COMPARING AND ORDERING DECIMALS						
				• To learn decimal notation and the language associated with it, including in the context of measurements. • To represent numbers with one or two	• To read, *say,* write, order and compare numbers with up to three decimal places.	• To identify the value of each digit in numbers given to three decimal places.

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				decimal places in several ways, such as on number lines. • To compare numbers, amounts and quantities with the same number of decimal places up to two decimal places.		
ROUNDING DECIMALS						
				• To round decimals with one decimal place to the nearest whole number.	• To round decimals with two decimal places to the nearest whole number and to one decimal place.	
ADDING AND SUBTRACTING DECIMALS						
					• *To mentally add and subtract tenths, and one-digit whole numbers and tenths.* • *To practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1.*	

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MULTIPLYING AND DIVIDING DECIMALS						
				• 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 multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. • To associate a fraction with division and calculate decimal fraction equivalents for a simple fraction. • To multiply one-digit numbers with up to two decimal places by whole numbers *in practical contexts, such as measures and money.* • *To multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers in practical contexts involving measures and money.* • To use written division methods in cases where the answer has up to two decimal places. • *To recognise division calculations as the inverse of multiplication.*

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SOLVE DECIMAL PROBLEMS						
			• To solve problems that involve all of the above.	• To 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. • To solve simple measure and money problems involving fractions and decimals to two decimal places.	• To solve problems involving numbers up to three decimal places. • To *make connections between percentages, fractions and decimals and relate this to finding 'fractions of' to solve* problems which require knowing percentage and decimal equivalents of $\frac{11}{22}$, $\frac{11}{44}$, $\frac{11}{55}$, $\frac{22}{55}$, $\frac{44}{55}$ and those fractions with a denominator of a multiple of 10 or 25.	• To solve problems which require answers to be rounded to specified degrees of accuracy *and checking the reasonableness of their answers*.