Primary Mathematics Curriculum

Fractions

Children should be given opportunities to demonstrate how the knowledge and skills gained in this strand can be used to link, reinforce and progress learning across the other four interconnected strands.

	a The learner	b The learner	c The learner	d The learner	e The learner	f The learner	g The learner	h The learner	i The learner	j The learner	k The learner
Elements						**Fractions**					
Understanding and Connecting	Engages with activities involving partitioning and equal sharing of objects, shapes and sets.	Recognises, identifies and matches pairs. Explores how a whole object, 2-D shape or set can be shared often in different ways.	Partitions objects and shapes into two equal shares and describes the whole unit and parts by the number of shares/parts.	Establishes and identifies half of sets up to at least 10.	Makes explicit connections between the parts that make up one whole. Establishes and identifies half of sets up to at least 20.	Establishes and identifies quarters of sets. Explores the concept of equivalence between halves and quarters.	Establishes and identifies eighths, fifths and tenths of sets, shapes, other objects and line segments. Establishes the relationship between numerators and denominators, exploring the concept of proper and improper fractions. Expresses tenths in decimal form. Relates division to fractions.	Explores and identifies equivalent fractions with denominators 2–12. Adds and subtracts related fractions [fractions with different denominators that are multiples of each other] with and without manipulatives. Establishes multiple fractions of a whole unit or set with and without manipulatives. Converts improper fractions to mixed numbers and vice versa. Expresses hundredths in decimal form.	Adds and subtracts related fractions [fractions with different denominators that are multiples of each other] and mixed numbers. Identifies common denominators by listing multiples. Expresses thousandths in decimal form. Uses ratios to compare two quantities. Multiplies a whole number by a unit fraction. Explores products of multiplying a whole number by a unit fraction. Recognises the per cent symbol [%] and relates this to 'number of parts per hundred'.	Adds and subtracts unrelated fractions and mixed numbers. Recognises and uses thousandths and relates them to tenths, hundredths and decimal equivalents. Relates ratios to fractions of a quantity. Multiplies a whole number by a fraction [with numerator >1] and vice versa. Divides a whole number by a unit fraction and vice versa.	Multiplies a fraction by another fraction. Divides a whole number by a multiple fraction and vice versa. Uses ratios to compare three quantities. Finds equivalent ratios and simplifies ratios.

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Communicating	Attends to the conventions of partitioning and equal sharing.	Describes scenarios where sharing, combining or partitioning takes place.	Represents parts of models [sets, areas or line segments] using concrete materials. Compares and describes parts of sets in terms of quantity (For example: bigger, more, smaller, less than, the same as).	Recognises and names equal parts of a whole [halves]. Represents and records understanding of halves using manipulatives, pictorially or by using symbols.	Uses simple fraction names [halves and quarters] in real life situations. Represents and records understanding of quarters using manipulatives, pictorially or by using symbols. Explains unit fractions as one part of a whole.	Discusses and explains relationship between 'related fractions' halves and quarters [fraction families]. Explores different models to demonstrate understanding of simple equivalent fractions (For example: using number lines). Explains multiple fractions as more than one part of a whole.	Establishes fractions of sets, line segments, objects and areas using manipulatives, illustrations and calculations. Establishes and represents equivalence between fraction families using manipulatives and different models (For example: on number lines).	Discusses and explains relationship between related fractions [fractions with different denominators that are multiples of each other] with denominators up to at least twelve [fraction families]. Combines fractions and expresses as improper fractions (where relevant). Investigates the equivalence of fractions within fraction families with and without manipulatives.	Identifies and represents equivalent fractions of a given fraction, including tenths and hundredths. Simplifies fractions with and without manipulatives and other representations. Demonstrates an understanding of benchmark percentages (For example: 50%, 25%, 10%, 1%) in the context of fractions and decimals. Models and expresses percentages as fractions and decimals and vice versa.	Uses common multiples to express equivalent fractions. Identifies equivalent ratios and simplifies ratios.	Uses a variety of visual representations to support their understanding of multiplication and division with fractions. Uses a variety of representations to express equivalence between fractions, ratio, decimals and percentages.

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Reasoning	Co-operates with activities involving partitioning and equal sharing.	Shares real objects and justifies the share. Sorts materials multiple times in different ways in an undirected manner [according to self-selected criteria].	Notices that some partitions lead to equal parts and some do not. Explores the partitioning of a whole unit and sets of items. Visualises and represents understanding of a half.	Partitions an array of objects, a shape or a line segment into two equal shares. Establishes that equal shares of identical wholes need not have the same shape.	Partitions an array of objects, a line segment or a shape into four equal shares. Demonstrates understanding that the greater the number of portions of a whole, the smaller the size of each equal share.	Justifies the ordering of fractions and whole numbers along a number line.	Explores patterns in respect of equivalent fractions. Given the unit fraction of a whole, establishes the whole using manipulatives, illustrations and calculations. Explains the role of the numerator and denominator. Compares and orders unit fractions with the different denominators.	Compares fractions, including equivalent fractions, [proper, improper and mixed numbers] and orders them on a number line. Calculates the whole, given a fraction [unit and multiple] of the whole. Expresses known measures [minutes/hours, cent/euro] as fractions.	Compares and orders fractions including equivalent fractions, with different denominators and numerators on a number line. Explores the relationship between fractions, decimals and percentages. Calculates ratios using proportions.	Represent ratios found in real-life contexts, using manipulatives, illustrations and standard fractional notation. Relates ratios to proportions. Explains how the value of a fraction relates to the value/ size of the whole unit.	Estimates and makes approximations in real-life situations involving fractions. Demonstrates an understanding of rate as a comparison, or ratio, of two measurements with different units (For example: distance to time). Uses known facts to make deductions about the relationship between fractions, decimals and percentages.
Applying and Problem-Solving	Practices the rules of equal sharing in real-life scenarios.	Applies idea of equal sharing among peers by partitioning whole sets of objects or spaces [using real-life contexts where appropriate].	Divides whole sets of objects, space or line segments into subsets or parts [using real-life contexts where appropriate].	Splits a whole into smaller parts and explains that 'equal parts' are the same size or value. Divides or shares out groups of objects equally into smaller groups. Investigates halves of different geometric shapes.	Explores and solves a range of everyday problems involving partitioning. Investigates quarters of different geometric shapes.	Investigates relationships between fractions using various models (For example: paper folding, clocks, games). Uses knowledge of halves and quarters to solve problems involving sharing and combining given quantities.	Manipulates models of related fractions [fractions with different denominators that are multiples of each other] for purposes of addition and subtraction [using real-life contexts where appropriate].	Use fractions to solve more complex word problems and puzzles involving numbers and measures. Solve a range of problems involving fractions given missing values.	Completes problem-solving tasks involving fractions and measures, explaining methods and reasoning. Identifies equivalent and simplified ratios.	Solves fraction problems involving addition and subtraction. Solves problems which requires application of fraction, percentage and decimal equivalents. Solves problems involving proportions.	Flexibly converts between fractions, decimals, ratio and percentages [using real-life contexts where appropriate]. Solves problems involving multiplication of fractions. Solves problems involving changing ratios.