

Numeracy Foundation Phase		Reception	Year 1	Year 2
Strands	Elements	Learners are able to:	Learners are able to:	Learners are able to:
Developing numerical reasoning	Identify processes and connections	- transfer mathematical skills to play and classroom activities - identify steps to complete the task or reach a solution - select appropriate mathematics and techniques to use - select and use relevant number facts and mental strategies - select appropriate equipment and resources - use knowledge and practical experience to inform estimations		
	Represent and communicate	- use everyday and mathematical language to talk about their own ideas and choices - present work orally, pictorially and in written form, and use a variety of ways to represent collected data - devise and refine informal, personal methods of recording, moving to using words and symbols in number sentences		
	Review	- use checking strategies to decide if answers are reasonable - interpret answers within the context of the problem and consider whether answers are sensible - interpret information presented in charts and diagrams and draw appropriate conclusions		
Using number skills	Use number facts and relationships	- count reliably up to 10 objects - read and write numbers to at least 10 - compare and order numbers to at least 10	- count reliably up to 20 objects - read and write numbers to at least 20 - compare and order numbers to at least 20 - use number facts within 10, i.e.: - doubling and halving, e.g. $4 + 4$ - bonds of 10, e.g. $6 + 4$	- count sets of objects by grouping in 2s, 5s or 10s - read and write numbers to 100 - compare and order 2-digit numbers - use mental recall of number facts to 10 to derive other facts, i.e.: - doubling and halving, e.g. <i>derive $40 + 40$ from knowing $4 + 4$</i> - bonds of 10, e.g. <i>derive $60 + 40$ from knowing $6 + 4$</i> - recall and use 2, 5 and 10 multiplication tables
	Fractions, decimals, percentages and ratio		find halves in practical situations	find halves and quarters in practical situations
	Calculate using mental and written methods	- combine two groups of objects to find ‘how many altogether?’ - take away objects to find ‘how many are left?’	- add and subtract numbers involving up to 10 objects - use ‘counting on’ strategies to add 2 collections, starting with the larger number, e.g. $8 + 5$	- find small differences within 20 by using ‘counting on’ strategies - use mental recall of number facts to 10 and place value to add or subtract larger numbers, e.g. $24 + 4$, $30 + 5$, $34 + 10$
	Estimate and check		make a sensible estimate of a number of objects that can be checked by counting	- use checking strategies: - repeat addition in a different order - use halving and doubling within 20
	Manage money	use 1p, 2p, 5p and 10p coins to pay for items	- use different combinations of money to pay for items up to 20p - find totals and give change from 10p	- use different combinations of money to pay for items up to £1 - find totals and give change from multiples of 10p
Using measuring skills	Length, weight/mass, capacity	- use direct comparisons with: - length, height and distance, e.g. <i>longer/shorter than</i> - weight/mass, e.g. <i>heavier/lighter than</i> - capacity, e.g. <i>holds more/less than</i>	- use non-standard units to measure: - length, height and distance - weight/mass - capacity	- use standard units to measure: - length, height and distance: metres, half metres or centimetres - weight/mass: kilograms or 10 gram weights - capacity: litres
	Time	- demonstrate a developing sense of how long tasks and everyday events take - use the concept of time in terms of their daily activities	- use standard units of time to read ‘o’clock’ using both analogue and 12-hour digital clocks - use the concept of time in terms of their daily and weekly activities and the seasons of the year	- read ‘half past’, ‘quarter past’ and ‘quarter to’ on an analogue clock - read hours and minutes on a 12-hour digital clock
	Temperature	use direct comparisons when describing temperature, e.g. <i>hot/cold</i>	use descriptive words for a range of temperatures, e.g. <i>cooler/warmer</i>	compare daily temperatures using a thermometer (°C)
	Area and volume Angle and position	move in given directions	make whole turns and half turns	- recognise half and quarter turns, clockwise and anti-clockwise - recognise that a quarter turn is a right angle
Using data skills	Collect and record data Present and analyse data Interpret results	- sort and classify objects using one criterion - record collections using marks, numbers or pictures.	- sort and classify objects using more than one criterion - collect information by voting or sorting and represent it in pictures, objects or drawings - make lists and tables based on data collected.	- gather and record data from: - lists and tables - diagrams - block graphs - pictograms where the symbol represents one unit - extract and interpret information from lists, tables, diagrams and graphs.

Numeracy Key Stage 2		Year 3	Year 4	Year 5	Year 6
Strands	Elements	Learners are able to:	Learners are able to:	Learners are able to:	Learners are able to:
Developing numerical reasoning	Identify processes and connections	- transfer mathematical skills to a variety of contexts and everyday situations - identify the appropriate steps and information needed to complete the task or reach a solution - select appropriate mathematics and techniques to use - select and use suitable instruments and units of measurement - choose an appropriate mental or written strategy and know when it is appropriate to use a calculator - estimate and visualise size when measuring and use the correct units			
	Represent and communicate	- explain results and procedures clearly using mathematical language - refine informal methods of recording written calculations, moving to formal methods of calculation when developmentally ready - use appropriate notation, symbols and units of measurement - select and construct appropriate charts, diagrams and graphs with suitable scales			
	Review	- select from an increasing range of checking strategies to decide if answers are reasonable - interpret answers within the context of the problem and consider whether answers, including calculator, analogue and digital displays, are sensible - draw conclusions from data and recognise that some conclusions may be misleading or uncertain			
Using number skills	Use number facts and relationships	- read and write numbers to 1 000 - compare and estimate with numbers up to 100 - use mental strategies to recall number facts within 20 - recall 2, 3, 4, 5 and 10 multiplication tables and use to solve multiplication and division problems - multiply numbers by 10	- read and write numbers to 10 000 - compare and estimate with numbers up to 1 000 - use mental strategies to recall multiplication tables for 2, 3, 4, 5, 6 and 10 and use to solve division problems - multiply and divide numbers by 10 and 100	- read and write numbers to 100 000 - compare numbers with 1 and 2 decimal places - use mental strategies to recall multiplication tables for 2, 3, 4, 5, 6, 8 and 10 and use to solve division problems - multiply and divide numbers and decimals by 10 and 100	- read and write numbers to 1 million and numbers to 3 decimal places - use mental strategies to recall multiplication tables up to 10 x 10 and use to solve division problems - multiply numbers and decimals by a multiple of 10, e.g. <i>15 x 30, 1.4cm x 20</i>
	Fractions, decimals, percentages and ratio	- use halves and quarters - halve 2-digit numbers in the context of number, money and measures - find fractional quantities linked to known multiplication facts, e.g. <i>¹⁄3 of 18, ¹⁄5 of 15</i>	- halve 3-digit numbers in the context of number, money and measures - find fractional quantities using known table facts, e.g. <i>¹⁄6 of 30cm</i> - recognise fractions that are several parts of a whole, e.g. <i>²⁄3, ³⁄10</i>	- use understanding of simple fraction and decimal equivalences when measuring and calculating, e.g. <i>¹⁄2 = 0.5, ¹⁄10 = 0.1</i> - calculate fractional quantities, e.g. <i>¹⁄8 of 24 = 3, so ⁵⁄8 of 24 = 15</i> - use doubling and halving strategies when working with simple proportions	- use understanding of simple fraction, decimal and percentage equivalences, e.g. <i>find 25% of 60cm and know that this is equivalent to ¹⁄4 of 60cm</i> - calculate percentage quantities based on 10%, e.g. <i>20%, 5%, 15%</i> - use simple ratio and proportion
	Calculate using mental and written methods	- find differences within 100 - use mental strategies to add and subtract 2-digit numbers - use partitioning to double and halve 2-digit numbers	- find differences within 1 000 - add a 2-digit number to, and subtract a 2-digit number from, a 3-digit number using an appropriate mental or written method - use mental strategies to multiply and divide 2-digit numbers by a single digit number	- find differences between numbers with 1 decimal place - add and subtract 3-digit numbers using an appropriate mental or written method - multiply and divide 3-digit numbers by a single-digit number	- add and subtract numbers using whole numbers and decimals - multiply 2- and 3-digit numbers by a 2-digit number - divide 3-digit numbers by a 2-digit number
	Estimate and check	- check subtraction using addition - check halving using doubling - check multiplication using repeated addition	- check answers using inverse operations - estimate by rounding to the nearest 10 or 100	- check answers using inverse operations - estimate by rounding to the nearest 10, 100 or 1 000	- check answers using inverse operations - estimate by rounding to the nearest 10, 100, 1 000 or whole number
	Manage money	- use different combinations of money to pay for items up to £2 and calculate the change - order and compare items up to £10 - record money spent and saved	- use money to pay for items up to £10 and calculate the change - order and compare items up to £100 - add and subtract totals less than £10 using correct notation, e.g. <i>£6.85 – £2.76</i> - manage money, compare costs from different retailers and determine what can be bought within a given budget	- order and compare the cost of items up to £1 000 - add and subtract totals less than £100 using correct notation, e.g. <i>£28.18 + £33.45</i> - plan and track money and savings by keeping accurate records - realise that budgeting is important	- use the terms profit and loss in buying and selling activities and make calculations for this - understand the advantages and disadvantages of using bank accounts - make comparisons between prices and understand which is best value for money
Using measuring skills	Length, weight/mass, capacity	- recognise that perimeter is the distance around a shape - use standard units of measure: - length: measure on a ruler to the nearest ¹⁄2 cm - weight/mass: use 5g, 10g and 100g weights - capacity: use litres and half litres; measure to the nearest 100ml	- measure and calculate the perimeter of squares and rectangles - measure on a ruler to the nearest mm and record using a mix of units, e.g. <i>1cm 3mm</i> - use weighing scales with divisions to weigh objects to the nearest 5g, 10g, 25g or 100g - measure capacities to the nearest 50ml or 100ml - convert metric units of length to smaller units, e.g. <i>cm to mm, m to cm, km to m</i>	- measure perimeters - use measuring instruments with 10 equal divisions between each major unit, and record using decimal notation, e.g. <i>4.2cm, 1.3kg</i> - make use of conversions, e.g. <i>¹⁄4 of a km = 250m</i>	- read and interpret scales or divisions on a range of measuring instruments - record measurements in different ways, e.g. <i>1.3kg = 1kg 300g</i> - use the language of imperial units in daily use, e.g. <i>miles, pints</i>
	Time	- tell the time to the nearest 5 minutes on an analogue clock and calculate how long it is to the next hour - read hours and minutes on a 12-hour digital clock using am/pm conventions	- tell the time to the nearest minute on analogue clocks - read hours and minutes on a 24-hour digital clock - time and order events in seconds - use calendars to plan events	- read and use analogue and digital clocks - time events in minutes and seconds, and order the results - carry out practical activities involving timed events and explain which unit of time is the most appropriate	- use and interpret timetables and schedules to plan events and activities and make calculations as part of the planning process - estimate how long a journey takes - time events in minutes and seconds to the nearest tenth of a second
	Temperature	take temperature readings using thermometers and interpret readings above and below 0°C			- measure and record temperatures involving positive and negative readings - calculate temperature differences, including those involving temperature rise and fall across 0°C
	Area and volume Angle and position	- find areas by counting squares - use the four compass points to describe directions	- recognise volume in practical contexts - use eight compass points to describe direction	- calculate, estimate and compare the area of squares and rectangles using standard units - find volumes by counting and other practical methods - use coordinates to specify location	- calculate the area of squares and rectangles - use grid references to specify location
Using data skills	Collect and record data Present and analyse data Interpret results	- represent data using: - lists, tally charts, tables and diagrams - bar charts and bar line graphs labelled in 2s, 5s and 10s - pictograms where one symbol represents more than one unit using a key - Venn and Carroll diagrams - extract and interpret information from charts, timetables, diagrams and graphs.		- represent data using: - lists, tally charts, tables, diagrams and frequency tables - bar charts, grouped data charts, line graphs and conversion graphs - extract and interpret information from an increasing range of diagrams, timetables and graphs (including pie charts) - use mean, median, mode and range to describe a data set.	

Numeracy Key Stage 3		Year 7	Year 8	Year 9
Strands	Elements	Learners are able to:	Learners are able to:	Learners are able to:
Developing numerical reasoning	Identify processes and connections	- transfer mathematical skills across the curriculum in a variety of contexts and everyday situations - select, trial and evaluate a variety of possible approaches and break complex problems into a series of tasks - prioritise and organise the relevant steps needed to complete the task or reach a solution - choose an appropriate mental or written strategy and know when it is appropriate to use a calculator - use a scientific calculator to carry out calculations effectively and efficiently using the available range of function keys - identify, measure or obtain required information to complete the task - identify what further information might be required and select what information is most appropriate - select appropriate mathematics and techniques to use - estimate and visualise size when measuring and use the correct units		
	Represent and communicate	- explain results and procedures precisely using appropriate mathematical language - refine methods of recording calculations - use appropriate notation, symbols and units of measurement, including compound measures - select and construct appropriate charts, diagrams and graphs with suitable scales - interpret graphs that describe real-life situations, including those used in the media, recognising that some graphs may be misleading		
	Review	- select and apply appropriate checking strategies - interpret answers within the context of the problem and consider whether answers, including calculator, analogue and digital displays, are sensible - verify and justify results or solutions, including discussion on risk and chance where relevant - interpret mathematical information; draw inferences from graphs, diagrams and data, including discussion on limitations of data - draw conclusions from data and recognise that some conclusions may be misleading or uncertain		
Using number skills	Use number facts and relationships	- read and write numbers of any size and use the four operations and the connections between them, <i>e.g. apply division as the inverse of multiplication</i> - recognise and apply key mental facts and strategies - use appropriate strategies for multiplication and division, including application of known facts - use the terms square and square root	- recognise and apply key mental facts and strategies - use known facts to derive others, <i>e.g. use 7×6 to derive 0.7×6</i> - use the terms cube, cube root and reciprocal	- use powers and understand the importance of powers of 10 - show awareness of the need for standard form and its representation on a calculator
	Fractions, decimals, percentages and ratio	- use equivalence of fractions, decimals and percentages to compare proportions - recognise that some fractions are recurring decimals, <i>e.g. $\frac{1}{3}$ is $0.33\bar{3}$</i> - calculate percentages of quantities using non-calculator methods where appropriate - use ratio and proportion including map scales	- use equivalence of fractions, decimals and percentages to select the most appropriate for a calculation - simplify a calculation by using fractions in their simplest terms - calculate a percentage, fraction, decimal of any quantity with a calculator where appropriate - calculate the outcome of a given percentage increase or decrease - use ratio and proportion to calculate quantities	- use equivalence of fractions, decimals and percentages to select the most appropriate for a calculation - use and interpret different representations of fractions, <i>e.g. mixed numbers and improper fractions</i> - express one quantity as a percentage of another - calculate a percentage increase or decrease - use ratio and proportion to calculate quantities
	Calculate using mental and written methods	- use efficient written methods to add and subtract numbers with up to 2 decimal places - multiply and divide 3-digit by 2-digit whole numbers, extending to multiplying and dividing decimals with 1 or 2 places by single-digit whole numbers - multiply and divide whole numbers by 0.5, 0.2, 0.1 - use the order of operations	- use efficient written methods to add and subtract numbers with up to 2 decimal places - use efficient methods for multiplication and division of whole numbers and decimals, including decimals such as 0.6 or 0.06 - use the order of operations including brackets	- use efficient written methods to add and subtract numbers and decimals of any size, including a mixture of large and small numbers with differing numbers of decimal places - multiply and divide whole numbers and decimals - use the order of operations including brackets and powers
	Estimate and check	- use a range of strategies to check calculations including the use of inverse operations, equivalent calculations and the rules of divisibility - use rounding to estimate answers - present answers to a given number of decimal places	- use rounding to estimate answers to a given number of significant figures - present answers to a given number of significant figures	- make and justify estimates and approximations of calculations - choose the appropriate degree of accuracy to present answers
	Manage money	- use profit and loss in buying and selling calculations - understand the advantages and disadvantages of using bank accounts, including bank cards - make informed decisions relating to discounts and special offers	- carry out calculations relating to VAT, saving and borrowing - appreciate the basic principles of budgeting, saving (including understanding compound interest) and borrowing	- calculate using foreign money and exchange rates - understand the risks involved in different ways of saving and investing - describe why insurance is important and understand the impact of not being insured
Using measuring skills	Length, weight/mass, capacity	- find perimeters of shapes with straight sides - read and interpret scales on a range of measuring instruments - convert between units of the metric system and carry out calculations	- use the common units of measure, convert between related units of the metric system and carry out calculations - use rough metric equivalents of imperial units in daily use	- find circumferences of circles - make links between speed, distance and time
	Time	- measure and record time in hundredths of a second - use time zones	- interpret fractions of a second appropriately - use timetables and time zones to calculate travel time	
	Temperature	record temperatures in appropriate temperature scales	convert temperatures between appropriate temperature scales	convert temperatures between appropriate temperature scales
	Area and volume Angle and position	- use formulae for the area of rectangles and triangles - measure and draw angles	- calculate areas of compound shapes (<i>e.g. consisting of rectangles and triangles</i>) and volumes of simple solids (<i>e.g. cubes and cuboids</i>) - use compass bearings and grid references to specify locations	- find areas of circles - apply understanding of bearings and scale to interpret maps and plans, and to create plans and drawings to scale
Using data skills	Collect and record data Present and analyse data Interpret results	- collect own data for a survey, <i>e.g. through designing a questionnaire</i> - construct frequency tables for sets of data, grouped where appropriate, in equal class intervals (groups given to learners) - construct a wide range of graphs and diagrams to represent the data and reflect the importance of scale - interpret diagrams and graphs (including pie charts) - use mean, median, mode and range to compare two distributions (discrete data).	- plan how to collect data to test hypotheses - construct a wide range of graphs and diagrams to represent discrete and continuous data - construct frequency tables for sets of data in equal class intervals, selecting groups as appropriate - construct graphs to represent data including scatter diagrams to investigate correlation - interpret diagrams and graphs to compare sets of data - use mean, median, mode and range to compare two distributions (continuous data).	- test hypotheses, making decisions about how best to record and analyse the information from large data sets - construct and interpret graphs and diagrams (including pie charts) to represent discrete or continuous data, with the learner choosing an appropriate scale - select and justify statistics most appropriate to the problem considering extreme values (outliers) - examine results critically, select and justify choice of statistics recognising the limitations of any assumptions and their effect on the conclusions drawn - use appropriate mathematical instruments and methods to construct accurate drawings.

Numeracy More able and talented		Extension
Strands	Elements	Learners are able to:
Developing numerical reasoning	Identify processes and connections	- transfer mathematical skills across the curriculum in a variety of contexts and everyday situations - select, trial and evaluate a variety of possible approaches and break complex problems into a series of tasks - prioritise and organise the relevant steps needed to complete the task or reach a solution - choose an appropriate mental or written strategy and know when it is appropriate to use a calculator - use a scientific calculator to carry out calculations effectively and efficiently using the available range of function keys - identify, measure or obtain required information to complete the task - identify what further information might be required and select what information is most appropriate - select appropriate mathematics and techniques to use - estimate and visualise size when measuring and use the correct units
	Represent and communicate	- explain results and procedures precisely using appropriate mathematical language - refine methods of recording calculations - use appropriate notation, symbols and units of measurement, including compound measures - select and construct appropriate charts, diagrams and graphs with suitable scales - interpret graphs that describe real-life situations, including those used in the media, recognising that some graphs may be misleading
	Review	- select and apply appropriate checking strategies - interpret answers within the context of the problem and consider whether answers, including calculator, analogue and digital displays, are sensible - verify and justify results or solutions, including discussion on risk and chance where relevant - interpret mathematical information; draw inferences from graphs, diagrams and data, including discussion on limitations of data - draw conclusions from data and recognise that some conclusions may be misleading or uncertain
Using number skills	Use number facts and relationships	use and interpret numbers in standard form within calculations
	Fractions, decimals, percentages and ratio	- use and understand the idea of reverse percentage to find an original quantity - use multipliers as an efficient method when working with percentages, <i>e.g. multiply by 1.2 to increase an amount by 20%</i> - use and understand ratio and proportion in 2 dimensions
	Calculate using mental and written methods	
	Estimate and check	recognise and define limitations on accuracy of measurements
	Manage money	- use and understand efficient methods of calculating compound interest - understand and demonstrate the real-life process of foreign exchange - understand and calculate income tax
Using measuring skills	Length, weight/mass, capacity	understand and use a variety of compound measures
	Time	
	Temperature	
	Area and volume Angle and position	apply proportional change to 2-dimensional designs
Using data skills	Collect and record data Present and analyse data Interpret results	understand slopes and gradients of graphs and relate to compound measures.