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Progression of Age-Related Expectations

Maths	Year 5	Year 6	Year 7	Year 8
Number and Place Value	I can read Roman Numerals to 1000 (M) and recognise years in Roman Numerals. I can solve number problems and practical problems that involve all of the below. I can round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000 I can use negative numbers in context; count forwards and backwards with positive and negative numbers through zero. I can count forwards and back in steps of powers of 10 for any given number up to 100000 I know what each digit represents in numbers up to 1000000 I can read, write, order and compare numbers to at least 1000000	I can identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places. I can use negative numbers in context, and calculate intervals across zero. I can round whole numbers to a required degree of accuracy. I can read, write, order and compare numbers up to 10000000 and determine the value of each digit.	Understand and use place value for decimals, measures and integers of any size. Order positive and negative integers, decimals and fractions. Use the symbols =, ≠, <, >, ≤, ≥ to make order statements about positive and negative integers, decimals and Fractions. Use both decimals and their corresponding fractions (such as 3.5 and 7/ or 0.375 and 3/). Round numbers and measures to different degrees of accuracy, for example to the nearest whole number or to one decimal place. Use standard units of mass, length, time, money and other measures, including with decimal quantities. Appreciate the infinite nature of the set of integers. Define percentage as 'number of parts per hundred', and know their decimal and fraction equivalents. Recognise and use relationships between the operations +, –, ×, ÷, including inverse operations. Use the priority of operations, including brackets. Use the four operations, including formal written methods, applied to integers and	Order positive and negative integers, decimals, fractions and numbers given in the form √n. Use the symbols =, ≠, <, >, ≤, ≥ to make order statements about integers, decimals, fractions and numbers given in the form √n. Relate percentages to decimals and fractions by showing their relative positions on a number line. Use standard units of mass, length, time, money and other measures, including with decimal and fractional quantities. Round numbers and measures to different degrees of accuracy. Multiply and divide a whole number by a fraction, whether positive or negative Understand the priority of operations, including brackets and powers. Recognise and use relationships between the operations +, –, ×, ÷, squaring and finding the square root, including inverse operations Interpret fractions and percentages as operators. Use integer powers. Use prime factorisation. Use decimals and their corresponding fractions and percentages. Interpret percentages and percentage changes as a fraction or a decimal, express one quantity as a percentage of another,

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			decimals; multiply proper and improper fractions, and mixed numbers, all both positive and negative. Use square, cube, square root and cube root Use the concepts and vocabulary of prime numbers, factors and multiples. Use approximation to estimate Answers. Use a calculator to calculate results accurately and then interpret them appropriately.	compare two quantities using percentages, work with percentages greater than 100%. Use approximation, through rounding to the nearest whole number or to one or two decimal places, to estimate answers. Use a calculator to calculate results accurately and then interpret them appropriately.
Addition and Subtraction	I can decide which operation to use to solve multi-step problems. I can use addition and subtraction to solve multi-step problems. I can use rounding to check answers to calculations. I can subtract mentally using increasingly large numbers. I can add mentally using increasingly large numbers. I can subtract whole numbers with more than 4 digits including formally written methods. I can add whole numbers with more than 4 digits including formally written methods.	I can use estimation to check answers to calculations and determine an appropriate degree of accuracy. I can solve problems involving addition, subtraction, multiplication and division in contexts, deciding which operations and methods to use and why.	Recognise and use relationships between the operations +, –, ×, ÷, including inverse operations Use the four operations, including formal written methods, applied to integers and decimals; add and subtract proper and improper fractions, and mixed numbers, all both positive and negative	Recognise and use relationships between the operations +, –, ×, ÷, including inverse operations
Multiplication and Division	I can solve problems involving × and ÷ including scaling by simple fractions, and problems involving simple rates. I can solve problems involving × and ÷ including using factors and multiples, squares and cubes.	I can multiply 1 digit numbers with up to 2 decimal places by whole numbers. I can solve problems involving addition, subtraction, multiplication and division. I can identify common factors, common multiples and prime numbers.	Recognise and use relationships between the operations +, –, ×, ÷, including inverse operations Use the priority of operations, including brackets	Understand the priority of operations, including brackets and powers Recognise and use relationships between the operations +, –, ×, ÷, squaring and finding the square root, including inverse operations

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	I can recognise and use square numbers and cube numbers and the notation for squared (2) and cubed (3). I can × and ÷ whole numbers and those involving decimals by 10, 100 and 1000 I can multiply and divide numbers mentally. I can divide numbers up to 4 digits by a 1 digit number. I can multiply numbers up to 4 digits by a 1 or 2 digit numbers. I can establish whether a number up to 100 is a prime and recall prime numbers up to 19 I know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. I can identify multiples and factors, including finding all factor pairs.	I can perform mental calculations, including with mixed operations and large numbers. I can divide numbers up to 4 digits by a 2 digit number using the formal method of short division where appropriate, interpreting remainders according to the context. I can interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. I can divide numbers up to 4 digits by a 2 digit number whole number using the formal written method of long division. I can multiply numbers up to 4 digits by a 2 digit whole number, using the formal written method of long multiplication.	Use the four operations, including formal written methods, applied to integers and decimals; multiply proper and improper fractions, and mixed numbers, all both positive and negative Use square, cube, square root and cube root Use the concepts and vocabulary of prime numbers, factors and multiples Use approximation to estimate answers Use a calculator to calculate results accurately and then interpret them appropriately	Use approximation, through rounding to the nearest whole number or to one or two decimal places, to estimate answers Use a calculator to calculate results accurately and then interpret them appropriately
Fractions	I can write % as a fraction. I recognise the % symbol and understand what it means. I can solve problems involving numbers up to 3 decimal places. I can read, write, order and compare numbers with up to 3 decimal places. I can round decimals with 2 decimal places to the nearest whole number and to one decimal place. I can recognise and use 1000ths and relate them to 10tss and 100ths and decimal equivalents	I can recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. I can use written division methods in cases where the answer has up to 2 decimal places. I can divide proper fractions by whole numbers (for example, 1/3 ÷ 2 = 1/6). I can multiply simple pairs of proper fractions by whole numbers writing the answer in its simplest form (for example ¼ × ½ = 1/8). I can add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.	Order positive and negative integers, decimals and fractions Use both decimals and their corresponding fractions (such as 3.5 and 7 /2 or 0.375 and 3 /8)	Order positive and negative integers, decimals, fractions and numbers given in the form √n Relate percentages to decimals and fractions by showing their relative positions on a number line Interpret fractions and percentages as operators Use decimals and their corresponding fractions and percentages Interpret percentages and percentage changes as a fraction or a decimal, express one quantity as a percentage of another, compare two quantities using percentages, work with percentages greater than 100%

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	I can read and write decimal numbers as fractions. I can multiply proper fractions and mixed numbers by whole numbers. I can + and – fractions with the same denominators and denominators that are multiples of the same number. I can recognise mixed numbers and improper fractions and convert from one form to the other. I can identify, name and write equivalent fractions of a given fraction. I can compare and order fractions whose denominators are all multiples of the same number.	I can compare and order fractions including fractions > 1. I can use common factors to simplify fractions; use common multiples to express fractions in the same denomination.		
Measurement	I can use all four operations to solve problems involving measure, using decimal notation, including scaling. I can solve problems involving converting between units of time. I can estimate volume and capacity. I can estimate the area of an irregular shape. I can calculate and compare the area of rectangles (including squares). I can measure and calculate the perimeter of composite rectilinear shapes, in cm and m. I understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.	I can calculate, estimate and compare volume of cubes and cuboids using standard units including cm3 and m3, extending to mm3 / km3. I can calculate the area of parallelograms and triangles. I can recognise when it is possible to use formulae for area and volume. I can recognise that shapes with the same area can have different perimeters and vice versa. I can convert between miles and km. I can use, read, write and convert between standard units. I can solve problems involving the calculation and conversion of units of measure, using	Draw and measure line segments and angles in geometric figures. Calculate lengths represented by line segments in scale drawings given scale factors as ratios in the form 1 : n. Derive and apply formulae to calculate and solve problems involving perimeter and area of rectangles. Describe, sketch and draw: points, lines, parallel lines, perpendicular lines, right angles, polygons that are reflectively and rotationally symmetric. Use conventional terms and notations, such as using ‘dashes’ to indicate equal lengths and (multiple) arrows to indicate parallel lines.	Draw and measure line segments and angles in geometric figures. Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids and other prisms. Describe, sketch and draw: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric. Use conventional terms and notations, such as complementary to describe angles with a sum of 90˚ and supplementary to describe angles with a sum of 180˚. Use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to

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	I can convert between different units of metric measure.	decimal notation up to 3 decimal places where appropriate.	Use the standard conventions for labelling the sides and angles of triangle ABC Identify and illustrate properties of triangles, quadrilaterals. Apply translations, rotations and reflections to given figures, and identify translations, rotations and reflections. Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles.	a given line from/at a given point, bisecting a given angle).
Geometry	I can draw given angles and measure them in degrees (°). I can estimate and compare acute, obtuse and reflex angles. I know angles are measured in degrees. I can identify 3D shapes, including cubes and other cuboids, from 2D representations.	I can reflect simple shapes in the axes on a full coordinate plane. I can draw and translate simple shapes on the coordinate plane. I can describe positions on the full coordinate grid. I can find missing angles. I can recognise angles where they meet at a point, on a straight line or are vertically opposite. I can illustrate and name parts of circles including the radius, diameter and circumference. I can find unknown angles in any triangles, quadrilaterals and regular polygons. I can compare and classify geometric shapes based on their properties and sizes. I can recognise, describe and build simple 3D shapes, including making nets. I can draw 2D shapes using given dimensions and angles.		Classify quadrilaterals by their geometric properties and provide convincing arguments to support classification decisions. Know that translations, rotations and reflections map shapes onto congruent shapes. Understand and use the relationship between parallel lines and alternate and corresponding angles. Derive and use the sum of angles in a triangle. Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms and cylinders to solve problems in 3-D.
Statistics (incl. Probability at KS3)	I can complete, read and interpret information in tables, including timetables. I can solve 'difference' problems using information presented in a line graph. I can solve 'sum' problems using information presented in a line graph.	I can construct line graphs. I can interpret pie charts.	Record and describe the frequency of outcomes of simple probability experiments. Make and explain own judgments about the fairness of situations. Use the 0-1 probability scale. Use graphical representation involving discrete and grouped, data; and appropriate	Record and describe the frequency of outcomes of simple probability experiments. Make better informed judgments about the fairness of situations. Begin to allocate probabilities to particular outcomes by considering all possible outcomes.

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	I can solve 'comparison' problems using information presented in a line graph.		measures of central tendency (mean, mode, median) and spread (range). Construct and interpret frequency tables, bar charts, pie charts, pictograms, and vertical line charts. Describe mathematical relationships between two variables.	Understand why, when there are only two possible outcomes, the probabilities of the two possible outcomes sum to 1. Use graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range). Construct and interpret frequency tables, bar charts, pie charts, and pictograms for larger sets of categorical data, and vertical line charts. Describe simple mathematical relationships between two variables that can be seen in the data derived from own experiments or observations. Represent data on a scatter graph.
Ratio and Proportion		I can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. I can solve problems involving similar shapes where the scale factor is known or can be found. I can solve problems involving the calculation of percentages and the use of percentages for comparison. I can solve problems involving the relative size of 2 quantities where missing values can be found by using integer multiplication and division facts.	Express one quantity as a whole-number multiple or fraction of another. Use ratio notation, including reduction to simplest form. Use scale factors of scale diagrams and maps in everyday contexts. Relate the language of ratios and the associated calculations to the arithmetic of fractions. Divide an amount into a given ratio Use the idea of compound units (A 'per' B), as in unit pricing, to solve problems.	Express one quantity as a fraction of another Use scale factors when constructing similar shapes by enlargement. Relate the language of ratios and the associated calculations to gradients. Divide a given quantity into any ratio. Solve problems involving percentage change. Solve problems involving direct proportion, including graphical and algebraic representations. Use familiar compound units, such as speed, to solve problems.
Algebra		Use simple formulae	Use and interpret algebraic notation e.g: ab in place of a x b, a squared instead of a x a	Use and interpret algebraic notation eg: ab in place of a x b, a squared instead of a x a.

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		Generate and describe linear number sequences Express missing number problems algebraically	Substitute positive integer values into formulae and expressions, including scientific formulae. Understand the correct and incorrect use of '='; Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors. Simplify and expand algebraic expressions to maintain equivalence. Understand and use standard mathematical formulae. Use algebraic methods to solve linear equations in one variable. Model simple situations or procedures Produce graphs of linear functions of one variable. Interpret simple linear mathematical relationships, such as y equals 5 times x Use linear graphs to estimate values of y for given values of x. From given linear graphs find approximate answers to simple contextual questions Generate terms of a sequence with a simple nth term rule.	Substitute integer values into formulae and expressions, including scientific formulae. Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms , factors and correlations. Simplify, expand and factorise algebraic expressions to maintain equivalence. Rearrange formulae to change the subject Use algebraic methods to solve linear equations. Understand how the position of a point changes if one or both of its coordinates are multiplied by –1. Model situations or procedures by translating them into linear algebraic expressions or formulae. Recognise and produce graphs of linear functions of one variable. Interpret linear mathematical relationships, such as A plus 7 is 6 less than half of B both algebraically and graphically. Reduce a linear equation to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations. From given linear graphs find approximate answers to contextual questions. Generate terms of a sequence with an nth term rule

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Demonstrating Greater Depth in Maths	I can apply the above skills and the following skills in most situations including some problem solving: Interpret negative numbers in context and count forward and backwards in different amounts across zero Read and write harder decimals as fractions such as 1.375 = 1 whole and 3 eighths Convert between metric units to a higher number of decimal places Identify 3D shapes from nets Estimate accurately and compare different types of angles Understand some properties of regular and irregular polygons	I can apply the above skills and the following skills in most situations including some problem solving: Interpret and construct basic pie charts and line graphs Calculate and interpret the mean as an average Explain how to find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables. I can solve number and practical problems using my understanding of place value and algebra. I can associate a fraction with division and calculate decimal fraction equivalents (for example, 0.375) for a simple fraction (for example, 3/8).	I can apply the above skills and the following skills in most situations including some problem solving: Find missing terms in special sequences Write 10, 100, 1000 etc. as powers of 10 Write positive, negative integers and decimals in the form Ax10n Convert between fractions and decimals - eighths and thousandths Explore fractions above one, decimals and percentages Add and subtract numbers given in standard form Multiply by 0.1 and 0.01 Solve problems using the area of trapezia Explore multiplication and division in algebraic expressions Explore higher powers and roots Add and subtract simple algebraic fractions Find and use the angle sum of any polygon Use known facts to obtain simple proofs Understand and use the complement of a set Use a Venn diagram to calculate the HCF and LCM	I can apply the above skills and the following skills in most situations including some problem solving: Express ratios in the form 1 : n Explore direct proportion graphs Explore non-linear graphs Find the midpoint of a line segment Choose appropriate methods to solve complex percentage problems Understand gradient as a ratio Understand and use error interval notation Use of angle facts on parallel lines Prove simple geometric facts Round to a given number of significant figures Convert metric units of area and volume Plot a scatter graph, draw a line of best fit, use the line of best fit for estimations and interpret trends on scatter graphs Area of compound shapes including circles Factorise and expand single and double brackets Solve more complicated equations ad inequalities including with fractions, brackets or unknown on both sides Find an expression for the value of the nth term.