KEY STAGE 3

Key Stage 3 Sumdog Progression Framework

Contents

KS3 Number

Year 7	Year 8	Year 9	Age Related Expectations
• I can understand and use place value for decimals, measures and integers of any size. • I can order positive and negative integers, decimals and fractions • I can use the number line as a model for ordering integers, decimals and fractions • I can use the symbols =, ≠, <, >, ≤, ≥ to make order statements about positive and negative integers, decimals and fractions • I can use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple • I can use square, cube, square root and cube root • I can 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 • I can use conventional notation for	• I can state the multiplicative relationship between the numbers represented by any two digits in any number • I can order positive and negative integers, decimals, fractions and numbers given in the form √n • I can use the number line as a model for ordering integers, decimals, fractions and numbers given in the form √n • I can use the symbols =, ≠, <, >, ≤, ≥ to make order statements about integers, decimals, fractions and numbers given in the form √n • I can use prime factorisation • I can use integer powers • I can multiply and divide a whole number by a fraction, whether positive and negative • I can use conventional notation for the priority of operations, including brackets and powers • I can recognise and use relationships between the operations +, −, ×, ÷, squaring and finding the square root, including inverse operations	• I can state in the form $A \times 10^n$ (n any positive or negative integer) the multiplicative relationship between the numbers represented by any two digits in any number • I can order positive and negative integers, decimals, fractions and numbers given in the standard form $A \times 10^n$ $1 \leq A < 10$, where n is a positive or negative integer or zero • I can use the number line as a model for ordering of the real numbers • I can use the symbols =, ≠, <, >, ≤, ≥ to make order statements about real numbers • I can use prime factorisation, including using product notation and the unique factorisation property • I can use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 • I can distinguish between exact representations of roots and their decimal approximations • I am able to use the four operations applied to real numbers, whether positive or negative	• understand and use place value for decimals, measures and integers of any size • order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, <, >, ≤, ≥ • use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property • use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations • use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed

Year 7	Year 8	Year 9	Age Related Expectations
the priority of operations, including brackets • I can recognise and use relationships between the operations +, −, ×, ÷, including inverse operations • I can convert decimals and their corresponding fractions (such as 2.5 and $^5/_2$ or 0.875 and $^7/_8$) • I can define percentage as 'number of parts per hundred', and know their decimal and fraction equivalents • I can interpret fractions and percentages as operators • I can interpret percentages and percentage changes as a fraction or a decimal • I can use standard units of mass, length, time, money and other measures, including with decimal quantities • I can round numbers and measures to different degrees of accuracy, for example to the nearest whole number or to one decimal place • I can use approximation, through rounding to the nearest whole	• I can convert decimals their corresponding fractions and percentages (such as 2.5, $^5/_2$, and 250% or 0.875, $^7/_8$, and 87.5%) • I can relate percentages to decimals and fractions by showing their relative positions on a number line • I can interpret fractions and percentages as operators • I can interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100% • I can use standard units of mass, length, time, money and other measures, including with decimal and fractional quantities • I can round numbers and measures to different degrees of accuracy, for example, to the nearest whole number or to one or two decimal places • I can use approximation, through rounding to the nearest whole	• I can use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals • I can recognise and use relationships between any operations including inverse operations • I can interpret and compare numbers in standard form A x 10^n $1 \leq A < 10$, where n is a positive or negative integer or zero • I can convert decimals their corresponding fractions and percentages, and know the fraction and percentage equivalents of some common recurring decimals (such as 2.5, $^5/_2$, and 250% or 0.875, $^7/_8$, and 87.5%, or 0.66666…., $^2/_3$ and $66^2/_3$%) • I can relate percentages to decimals and fractions, moving efficiently between the different forms in any context • I can use A = $^1/_n$ of B to imply B = nA, and A = n% of B to imply B = $^{(100A)}/_n$ • I can explain why an "n% increase" is	numbers, all both positive and negative • use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals • recognise and use relationships between operations including inverse operations • interpret and compare numbers in standard form A x 10n $1 \leq A < 10$, where n is a positive or negative integer or 0 • work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and $^7/_2$ or 0.375 and $^3/_8$) • define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express 1 quantity as a percentage of another, compare 2 quantities

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number or to one decimal place, to estimate answers • I can use a calculator and other technologies to calculate results accurately and then interpret them appropriately • I can appreciate the infinite nature of the set of integers	number or to one or two decimal places, to estimate answers • I can use a calculator and other technologies to calculate results accurately and then interpret them appropriately • I can appreciate the infinite nature of the sets of integers and rational numbers	not the inverse operation of an "n% decrease" • I can use standard units of mass, length, time, money and other measures, including with decimal quantities and quantities given in the standard form $A \times 10^n$ $1 \leq A < 10$, where n is a positive or negative integer or zero • I can round numbers and measures to different degrees of accuracy, for example, to a number of decimal places or significant figures • I can calculate possible resulting errors expressed using inequality notation $a<x \leq b$ • I can use a calculator and other technologies to calculate results accurately and then interpret them appropriately • I can appreciate the infinite nature of the sets of integers, real and rational numbers	using percentages, and work with percentages greater than 100% • interpret fractions and percentages as operators • use standard units of mass, length, time, money and other measures, including with decimal quantities • round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] • use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a<x \leq b$ • use a calculator and other technologies to calculate results accurately and then interpret them appropriately • appreciate the infinite nature of the sets of integers, real and rational numbers

KS3 – Algebra

Year 7	Year 8	Year 9	Age Related Expectations
• I can use and interpret algebraic notation, including: – ab in place of a × b – 3y in place of y + y + y and 3 × y – a^2 in place of a × a, a^3 in place of a × a × a • I can substitute numerical values into basic formulae and expressions, including scientific formulae • I can understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors • I can simplify and manipulate algebraic expressions to maintain equivalence by: – collecting like terms – multiplying a single term over a bracket • I can understand and use standard mathematical formulae • I can use algebraic methods to solve linear equations with one variable • I can work with coordinates in all 4 quadrants • I can model simple situations or procedures involving two variables	• I can use and interpret algebraic notation, including: – ab in place of a × b – 3y in place of y + y + y and 3 × y – a^2 in place of a × a, a^3 in place of a × a × a; a^2b in place of a × a × b – $^a/_b$ in place of a ÷ b • I can substitute numerical values into more complex formulae and expressions, including scientific formulae • I can understand and use the concepts and vocabulary of expressions, equations, inequalities, terms, factors and correlation / covariation • I can simplify and manipulate algebraic expressions to maintain equivalence by: – taking out common factors – expanding products of two or more binomials • I can rearrange formulae to change the subject • I can use algebraic methods to solve linear equations with one variable	• I can use and interpret algebraic notation, including coefficients written as fractions rather than as decimals • I can substitute numerical values into highly complex formulae and expressions, including scientific formulae • I can understand and use the concepts and vocabulary of expressions, equations, inequalities, terms, factors, correlation / covariation and parameters • I can identify relationships before acting on expressions • I can recognise problems that can lead to equivalent expressions • I can manipulate and simplify to exemplify equivalent expressions • I can recognise and reason why it is important to rearrange formulae to change the subject • I can use algebraic methods to solve linear equations in one variable including those forms that need rearrangement • I can express facts observed and	• use and interpret algebraic notation, including: – ab in place of a × b – 3y in place of y + y + y and 3 × y – a^2 in place of a × a, a^3 in place of a × a × a; a^2b in place of a × a × b – $^a/_b$ in place of a ÷ b • coefficients written as fractions rather than as decimals • brackets • substitute numerical values into formulae and expressions, including scientific formulae • understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors • simplify and manipulate algebraic expressions to maintain equivalence by: – collecting like terms – multiplying a single term over a bracket – taking out common factors – expanding products of 2 or more binomials

Year 7	Year 8	Year 9	Age Related Expectations
by translating them into linear algebraic expressions or formulae and by using graphs • I can recognise, sketch and produce simple graphs of linear of 1 variable with appropriate scaling, using equations in x and y and the Cartesian plane • I can interpret simple linear mathematical relationships, both algebraically and graphically • I can use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations • I can find approximate answers to simple contextual questions from given linear graphs • I can generate terms of a sequence with a simple linear position-to-term rule (e.g. the value of the *n*th term is n + 2) from either the term-to-term or the position-to-term rule	including those forms that need rearrangement • I can understand how the position of a point changes if one or both of its coordinates are multiplied by ⁻1 • I can model situations or procedures by translating them into algebraic expressions or formulae and by using graphs • I can recognise, sketch and produce increasingly complex graphs of linear functions of one variable with appropriate scaling, using equations in *x* and *y* and the Cartesian plane • I can interpret linear mathematical relationships, both algebraically and graphically • I can reduce a given linear equation in two variables to the standard form $y = mx + c$ • I can calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically • I can use linear and quadratic graphs to estimate values of *y* for given values of *x* and vice versa and	develop interpretations of a solution with given problems • I can understand the relationship between the coordinates of two points when each point is the reflection of the other in the *y*-axis, the *x*-axis, the line $y = x$ or the line $y = -x$ • I can relate changes in situations or procedures to changes in algebraic expressions, formulae or graphs • I can recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in *x* and *y* and the Cartesian plane • I can interpret linear and quadratic mathematical relationships, both algebraically and graphically • I can reduce a linear equation that expresses a relationship between two variables in a situation to the standard form $y = mx + c$ • I can calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically, algebraically in any context	• understand and use standard mathematical formulae; rearrange formulae to change the subject • model situations or procedures by translating them into algebraic expressions or formulae and by using graphs • use algebraic methods to solve linear equations in 1 variable (including all forms that require rearrangement) • work with coordinates in all 4 quadrants • interpret mathematical relationships both algebraically and graphically • recognise, sketch and produce graphs of linear and quadratic functions of 1 variable with appropriate scaling, using equations in x and y and the Cartesian plane • reduce a given linear equation in 2 variables to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically • use linear and quadratic graphs to estimate values of y for given values of x and vice versa and

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	to find approximate solutions of simultaneous linear equations • I can find approximate answers to simple contextual questions from given linear graphs • I can generate terms of a sequence with a linear position-to-term rule from either the term-to-term or the position-to-term rule • I can begin to generate terms of a sequence from a position-to-term rule • I can recognise arithmetic sequences and find an expression for the value of the *n*th term	• I can use linear and quadratic graphs to estimate values of *y* for given values of *x* and vice versa and to find approximate solutions of simultaneous linear equations when at least one equation is of the form $y = k$ or $x = k$ • I can find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs • I can confidently generate terms of a sequence from either a term-to-term or a position-to-term rule • I can easily recognise arithmetic sequences and find an expression for the value of the *n*th term • I can recognise geometric sequences and appreciate other sequences that arise	to find approximate solutions of simultaneous linear equations • find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs • generate terms of a sequence from either a term-to-term or a position-to-term rule • recognise arithmetic sequences and find the nth term • recognise geometric sequences and appreciate other sequences that arise

KS3 – Ratio, proportion and rates of change

Year 7	Year 8	Year 9	Age Related Expectations
• I can convert between related standard units, for example: time (3 hours = 3 × 360 seconds), length (5 mm = 5 × 0.1 cm), area (6 m^2 = 6 × 10000 cm^2), volume/ capacity (7 mm^3 = 7 x 0.001 cm^3), mass (8 kg = 8 × 1000 g) • I can use scale factors of scale diagrams and maps in everyday contexts • I can express one quantity as a whole-number multiple of another, and by reversing the expression of the same relationship express one quantity as a unit fraction of another • I can understand that a multiplicative relationship between two quantities that can be expressed as a ratio • I can use ratio notation, including reduction to simplest form • I can relate the language of ratios and the associated calculations to the arithmetic of fractions • I can divide a given quantity into two parts in a given part:whole ratio to finding a fraction of a quantity; • I can use part:part ratios of	• I can convert freely between related standard units, for example speed (m per sec to km per hour and vice-versa) • I can use scale factors when constructing similar shapes by enlargement and describe the effect • I can express one quantity as a fraction of another, where the fraction is less than 1 and where it is greater than 1 • I can understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction • I can use ratio notation, including reduction to simplest form and show the inverse • I can relate the language of ratios and the associated calculations to gradients • I can divide a given quantity into two parts in a given part:part or part:whole ratio; • I can express the division of a quantity into two parts as a ratio • I can solve increasingly complex problems involving percentage	• I can convert freely between related standard units, for example acceleration • I can use scale factors when solving problems involving similar shapes, enlargement and predict the effects • I can immediately express a quantity given as a non-unit fraction of another quantity in fractional terms and reverse this as necessary • I can understand that a multiplicative relationship between two quantities can be expressed as a ratio, fraction or decimal • I can use ratio notation, including reduction to simplest form and show the inverse with increasing complexity • I can relate the language of ratios and the associated calculations to linear functions • I can compare expressions to identify when using 'part' is both a helpful and unhelpful model in context • I can solve complex problems involving simple interest in financial mathematics • I can solve problems involving	• change freely between related standard units [for example time, length, area, volume/capacity, mass] • use scale factors, scale diagrams and maps • express 1 quantity as a fraction of another, where the fraction is less than 1 and greater than 1 • use ratio notation, including reduction to simplest form • understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction • relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions • divide a given quantity into 2 parts in a given part:part or part:whole ratio; express the division of a quantity into 2 parts as a ratio • solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics • solve problems involving direct and inverse proportion,

Year 7	Year 8	Year 9	Age Related Expectations
quantities to the corresponding part:whole ratios • I can solve problems involving percentage change, including: percentage increase, decrease and original value problems • I can use the idea of compound units, as in unit pricing, to solve problems	change, including: percentage increase, decrease and original value problems • I can solve problems involving direct proportion, including graphical and algebraic representations • I can use familiar compound units, such as speed, to solve problems	direct and inverse proportion, including graphical and algebraic representations • I can use a variety of compound units, including density, to solve problems	including graphical and algebraic representations • use compound units such as speed, unit pricing and density to solve problems

KS3 – Geometry and measures

Year 7	Year 8	Year 9	Age Related Expectations
• I can derive and apply formulae to undertake calculations and solve problems involving perimeter and area of rectangles • I can draw and measure line segments and angles in geometric figures; calculate lengths represented by line segments in scale drawings • I can describe, sketch and draw: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric • I can use conventional terms and notations, such as using 'dashes' to indicate equal lengths and (multiple) arrows to indicate parallel lines • I can use the standard conventions for labelling the sides and angles of triangle ABC • I can derive and illustrate properties [for example, equal lengths and angles] of triangles, quadrilaterals, circles and other plane figures using appropriate language and technologies	• I can derive and apply formulae to undertake calculations and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders) • I can 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 any form • I can describe, sketch and draw: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric • I can use conventional terms and notations, e.g. *complementary* = angles with a sum of 90° and *supplementary* = angles with a sum of 180° • I can derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a	• I can undertake calculations and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes • I can draw and measure line segments and angles in geometric figures, including interpreting scale drawings with complexity in any context • I can describe, sketch and draw: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric • I can use conventional terms and notations, e.g. *definition*, *derived property* and *convention* • I can use construction methods to: investigate what happens (for example to the angle bisectors, or perpendicular bisectors of sides, of triangles) in changing situations • I can explore derived shapes, such as circumcircles and inscribed circles of triangles, and other polygons	• derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders) • calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes • draw and measure line segments and angles in geometric figures, including interpreting scale drawings • describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric • derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/ at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point

Year 7	Year 8	Year 9	Age Related Expectations
• I can apply translations, rotations and reflections to given figures • I can identify examples of translations, rotations and reflections • I can construct similar shapes by enlargement, with coordinate grids • I can apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • I can derive and use the sum of angles in a triangle • I can apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides • I can use the properties of faces, surfaces, edges and vertices of cubes, cuboids and prisms to solve problems in 3-D • I can interpret mathematical relationships both algebraically and geometrically	perpendicular to a given line from/at a given point, bisecting a given angle) • I can recognise and use the perpendicular distance from a point to a line as the shortest distance to the line • I can use and explain the criteria for congruence of triangles in specific contexts • I can derive and illustrate properties [for example, equal lengths and angles] of triangles, quadrilaterals, circles and other plane figures using appropriate language and technologies in differing contexts • I understand that translations, rotations and reflections map shapes congruently • I can understand that congruency implies a translation, rotation or reflection can take one shape to another • I can construct similar shapes by enlargement, with and without coordinate grids • I can understand and use the relationship between parallel lines	and identify where this is and is not possible • I can use amd explain the criteria for congruence of triangles and apply this in differing contexts • I can derive and illustrate properties [for example, equal lengths and angles] of triangles, quadrilaterals, circles and other plane figures using appropriate language and technologies in complex contexts • I can identify properties of, and describe the results of, translations, rotations and reflections applied to given figures • I can reason using congruence criteria, and can explain using examples • I can identify and construct congruent triangles, with and without coordinate grids • I can understand and use the relationship between parallel lines and alternate and corresponding angles and apply it to different contexts • I can use the sum of angles in a triangle to deduce the angle sum	to a line as the shortest distance to the line • use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles • derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies • identify properties of, and describe the results of, translations, rotations and reflections applied to given figures • identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids • apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • understand and use the relationship between parallel lines and alternate and corresponding angles • derive and use the sum of angles in a triangle and use it to deduce the

Year 7	Year 8	Year 9	Age Related Expectations
	and alternate and corresponding angles • I can derive and use the sum of angles in a triangle in specific contexts • I can apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides • I can use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms and cylinders to solve problems in 3-D • I can interpret mathematical relationships both algebraically and geometrically	in any polygon, and to derive properties of regular polygons • I can apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs • I can use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles • I can use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D • I can interpret mathematical relationships both algebraically and geometrically	angle sum in any polygon, and to derive properties of regular polygons • apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs • use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles • use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D • interpret mathematical relationships both algebraically and geometrically

KS3 – Probability

Year 7	Year 8	Year 9	Age Related Expectations
• I can record and describe the frequency of outcomes of simple probability experiments • I can explain my findings using my own ideas about randomness and possible outcomes • I can make and explain my own judgments about the fairness of situations • I can understand that the probability of an impossible event is 0, and of a certain event is 1, and begin to use the 0-1 probability scale • I can understand why, when there are only two possible outcomes, the probabilities of the two possible outcomes sum to 1 • I can enumerate sets systematically, devising their own diagrams • I can generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes • I can use these to calculate simple theoretical probabilities	• I can record and describe the frequency of outcomes of simple probability experiments • I can begin to refine my own ideas about causal connections that involve randomness, equally and unequally likely outcomes and the properties of data distributions • I can make better informed judgments about the fairness of situations by considering all possible outcomes • I can understand why, when there are several possible outcomes, the probabilities of the two possible outcomes sum to 1 • I can enumerate sets systematically making use of tables and grids • I can generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes • I can use these to calculate increasingly complex theoretical probabilities	• I can record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale • I can notice and explain the same patterns in different situations • I can understand and explain that the probabilities of all possible outcomes sum to 1 • I can enumerate sets and unions/ intersections of sets systematically, using tables, grids and Venn diagrams • I can generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes • I can use these to calculate highly complex theoretical probabilities	• record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale • understand that the probabilities of all possible outcomes sum to 1 • enumerate sets and unions/ intersections of sets systematically, using tables, grids and Venn diagrams • generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities

KS3 – Statistics

Year 7	Year 8	Year 9	Age Related Expectations
• I can describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, including grouped, data • I can use appropriate measures of central tendency (mean, mode, median) and spread (range) • I can construct and interpret frequency tables, bar charts, pie charts, and pictograms for simple categorical data, and vertical line (or bar) charts for small sets of ungrouped numerical data and numerical data grouped into a small number of groups • I can describe mathematical relationships between two variables that are easily visible in the data derived from experiments or observations	• I can describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data • I can use appropriate measures of central tendency (mean, mode, median) and spread (range) with increased complexity • I can construct and interpret frequency tables, bar charts, pie charts, and pictograms for larger sets of categorical data, and vertical line (or bar) charts for larger sets of ungrouped and grouped numerical data • I can describe simple mathematical relationships between two variables that can be seen in the data derived from students' own experiments or observations • I can represent bivariate data on a scatter graph	• I can describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped, data • I can use appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers) • I can construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data • I can extrapolate trends, correlation and causation as a consequence • I can describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts • I can use a scatter graph to illustrate simple mathematical relationships between two variables and explain the findings	• describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers) • construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data • describe simple mathematical relationships between 2 variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs