Hampshire Services
HIAS SCHOOL IMPROVEMENT

KS3 Assessment Model : Year 8

Year 8	Number	Algebra	Ratio, Proportion and Rates of Change	Geometry and Measure	Probability	Statistics
Fluency Reasoning Problem solving	Select and use appropriate calculation strategies to solve increasingly complex problems	Move freely between different numerical, algebraic, graphical and diagrammatic representations Develop algebraic and graphical fluency	Interpret when the structure of a numerical problem requires proportional reason ing Begin to model situations mathematically	Begin to reason deductively in geometry Begin to model situations geometrically	Explore what can and cannot be inferred in probabilistic settings and express arguments formally	Explore what can and cannot be inferred in statistical settings and express arguments formally
Phase 1 inc. Yr 7	Understand and use place value for decimals, measures and integers of any size Use the four operations, applied to decimals, proper and improper fractions, and mixed numbers, positive and negative Interpret fractions and percentages as operators Use 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 Compare two quantities using percentages	Use algebraic notation including coefficients written as fractions rather than decimals, brackets Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors Simplify and manipulate algebraic expression by collecting like terms, multiplying a single term over a bracket, by taking out common factors Use algebraic methods to solve linear equations in one variable Generate terms of a sequence from a term-to-term rule or a position-to-term rule Recognise arithmetic sequences and find the nth term	Change freely between related standard units (for example time, length, area, volume/capacity, mass) Divide a given quantity into two parts in a given part: part or part:whole ratio; express the division of a quantity into two parts as a ratio Solve problems involving percentage change	Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures (for example, equal lengths and angles) using appropriate language and technologies Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons Understand and use the relationship between parallel lines and alternate and alternate and corresponding angles	Record describes 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	Describe, interpret and compare observed distributions of a single variable through: data sets from univariate empirical distributions through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)
Phase 2	Round numbers and measures to an appropriate degree of accuracy (decimal places or sig fig) Work with percentages greater than 100% Use conventional notation for powers and roots	Substitute numerical values into scientific formulae Rearrange to change the subject Solve linear equations including rearrangement Reduce a given linear equation in two variables to the standard form y=mx+c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and	Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction Use compound units such as speed, unit pricing and density to solve problems. Use scale factors, scale diagrams and maps	Calculate and solve problems involving: perimeters of 2D shapes (including circles), areas of circles and composite shapes Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes)		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 numerical data and grouped numerical data
Phase 3	Interpret and compare numbers in standard form A x 10n 1 ≤ A < 10, where n is appositive or negative integer or zero Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7/2 or 0.375 or 3/8)	Model situations or procedures by translating them into algebraic expressions or formulae or by using graphs Interpret mathematical relationships both algebraically and graphically 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 Find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal	Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics	Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids Draw and measure line segments and angles in geometric figures, including interpreting scale drawings	Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities	Describe simple mathematical relationship between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs

Hampshire Services
HIAS SCHOOL IMPROVEMENT

HIAS Maths Team

Jo.lees@hants.gov.uk

For further details on the full range of services available please contact us using the following email:

htlcdev@hants.gov.uk

Upcoming Courses

Keep up-to-date with our learning opportunities for each subject through our Upcoming Course pages linked below. To browse the full catalogue of learning offers, visit our new Learning Zone. Full details of how to access the site to make a booking are provided here.

- English
- Maths
- Science
- Geography
- RE
- History
- Leadership
- Computing
- Art
- D&T
- Assessment
- Support Staff
- SEN