

Bohunt Worthing Grade Descriptors

Subject: Maths



GCSE Grade	Number	Algebra	Geometry	Probability & Statistics
8	I am able to calculate exactly with surds, simplify surd expressions involving squares and rationalise denominators.	I am able to manipulate complex formulae, expressions, equations and identities, deduce nth terms of quadratic sequences and use simple geometric progressions. I can find equations of parallel and perpendicular lines, recognise and sketch exponential functions and transform algebraic and trigonometric functions. I can solve quadratic inequalities and simultaneous equations and develop an understanding of calculus through estimation and application of knowledge.	I am able to use concepts of congruence and circle theory to deduce proof and calculate arcs and sectors using multiples of π . I can fluently use the sine and cosine rule and employ the trig ratios in 3D scenarios, whilst combining transformations and enlarging with negative scale factors. I can compare similar shapes via area and volume scale factor and use vectors to construct geometric proof.	I am able to construct and interpret diagrams for grouped discrete data and continuous data, for example histograms with equal and unequal class intervals and know their appropriate use.
7	I am able to change between recurring decimals and fractions, calculate upper and lower bounds and in standard form. I can calculate growth and decay and employ reverse percentages, formulate equations to model inverse and direct proportion and calculate with fractional indices.	I am able to use complex formulae, expressions, equations and identities. I can recognise simple geometric progressions, polynomial, reciprocal and quadratic functions and solve simple kinematic problems, linear and simultaneous equations and inequalities graphically, algebraically and via iteration.	I am able to use congruence to obtain simple proof, find centres of rotation, using the trigonometric ratios in 2D and find volume and surface area of complex 3D shapes.	I am able to calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn Diagrams.
6	I can compare numbers in standard form; interpret percentages and percentage changes as a fraction or a decimal. I can solve problems involving inverse proportion, employ reverse percentages and calculate with roots and integer indices.	I am able to use complex formulae, expressions and equations and find equations of lines and plot linear graphs. I can solve linear, quadratic and simultaneous equations and inequalities graphically, algebraically and via iteration.	I am able to change freely between compound units, use Pythagoras' Theorem and trigonometric ratios and apply angle facts, similarity and properties of quadrilaterals to derive results about angles and sides.	I can apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one. I can calculate the probability of independent and dependent combined events, including using tree diagrams and other representations and knowing the underlying assumptions.

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5	I can use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation. I can solve problems involving percentage change. I can explain relationships using direct proportion and I can use the concepts and vocabulary of common factors, common multiples, HCF, LCM and prime factorisation.	I am able to simplify, manipulate and solve algebraic expressions and equations by expanding products of two or more binomials. I can generate terms of a quadratic sequence from a term-to-term or a position-to-term rule. I can plot quadratic and cubic graphs, employ the equation of straight line to calculate gradients and intercepts and model real life situations graphically. I understand and use the concepts of inequalities.	I am able to use compound units. I can derive sums of angles in polygons. I can use ruler and compass constructions to work with Loci, plans and elevations, enlarge shapes in 2D and 3D and find surface area and volume of prisms. I can derive Pythagoras theorem and work with area and circumference of circles.	I am able to describe, interpret and compare observed distributions of a single variable through appropriate measures of central tendency using interquartile range. I can draw estimated lines of best fit, make predictions, interpolate and extrapolate apparent trends while knowing the dangers of so doing.
4	I am able to divide and multiply decimal numbers and can use the convention of BIDMAS and index notation freely. I can divide, add and subtract fractions including mixed numbers. I understand how to apply percentage increase and decrease, work with proportional quantities, and divide an amount into a given ratio.	I am able to simplify, manipulate and solve algebraic expressions and equations using brackets effectively. I can use trial and improvement where necessary. I can generate terms of a linear sequence from a term-to-term or a position-to-term rule and recognise geometric sequences. I can model situations or procedures by using graphs and interpret mathematical relationships algebraically and graphically.	I am able to use scale factors and diagrams. I problem solve with angles formed by parallel lines, I can derive and use standard ruler and compass constructions. I understand 2D and 3D shapes and can find surface area and volume of cuboids.	I am able to work freely with scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation. I can construct pie charts and grouped frequency tables and design questionnaires. I can enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams.

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3	I am able to multiply and divide and negative numbers. I understand and use place value for decimal numbers and can round decimals. I can multiply fractions and convert between fractions, decimals and percentages. I understand and can use ratio notation.	I can recognise and use relationships between operations, including inverse operations, substitute numerical values into formulae, rearrange formulae to change the subject and model situations or procedures by translating them into formulae.	I am able to draw and measure bearings, including line segments in geometric figures, and interpret scale drawing. I can derive and illustrate properties of triangles and quadrilaterals, parallelograms and trapezia, including perimeter and area, use the sum of angles in a triangle and deduce the angle sum in a quadrilateral. I understand rotational symmetry and can rotate and reflect shapes on a Cartesian co-ordinate grid. I understand 3D shapes and their associated terminology.	I am able to use frequency tables and vertical line charts. I understand that the probabilities of all possible outcomes sum to 1 and can generate theoretical sample spaces for single events with equally likely, mutually exclusive outcomes.
2	I am able to multiply and divide positive integers. I can add and subtract decimals and understand and use place value for negative numbers. I can find equivalent fractions, find percentages of amounts and work with factors, powers and prime numbers.	I am able to combine, use and interpret algebraic notation, substitute numerical values into expressions and I understand and use the concepts and vocabulary of expressions and terms. I can simplify and manipulate algebraic expressions, model situations or procedures by translating them into algebraic expressions and generate sequences from a position to term rule.	I can understand and use place value for measures, including with decimal quantities. I understand rotational symmetry can translate shapes on a Cartesian co-ordinate grid. I can derive formulae to calculate and solve problems involving area and can draw and measure angles and use them to construct simple polygons.	I am able to use stem and leaf diagrams, I understand and use the mean, median, mode and range of data. I can record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, and equally likely outcomes using appropriate language and the 0-1
1	I am able to add, subtract and order positive integers using the symbols =, $\neq$, $<$, $>$, $\leq$, $\geq$. I can round to the nearest 10 and 100 and understand basic fractions and the concept of multiples.	I am able to generate terms of a sequence from a term -to-term rule.	I am able to understand and use place value when using units of volume, mass and length, including decimal quantities and change freely between related standard units. I understand symmetry and Cartesian co-ordinate grid and can describe common shapes.	I can describe, interpret and compare observed distributions of a single variable through appropriate graphical representation involving discrete data. I can construct and interpret appropriate tables, charts and diagrams, including frequency tables, bar charts and pictograms for categorical data.

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