Revision 'Must Know' Checklist: Y10 Maths Foundation Tier (Upper)

Below is a checklist of everything you must know to be successful by the end of this year.

Number	Algebra	Geometry and Measures	Ratio and Proportion	Statistics and Probability
• Use and order positive and negative integers, decimals. • Add, subtract, multiply and divide decimals • Add, subtract, multiply and divide positive and negative integers • Use the order of operations with and without calculators for all calculations • Use inequality notation to specify simple error intervals due to truncation or rounding • Multiply and divide numbers by powers of 10. Use one calculation to find an answer for another. • Round numbers to a given number of significant figures • Estimate numerical calculations by rounding numbers to 1 significant figure	• Identify expression/equation/ formula/identity from a list. Introduce the identity ≡ sign. • Argue mathematically to show algebraic expressions are equivalent. • Manipulate and simplify algebraic expressions by collecting 'like' terms • Multiply and divide algebraic expression and use correct algebraic notation • Use index notation and laws when multiplying or dividing algebraic terms • Substitute positive/negative numbers into algebraic expressions, formula and worded formula • Expand a single bracket and more than one set of single brackets • Factorise into single brackets, including factorising algebra • Rearrange one step and two step formulae • Rearrange three step formulae	• Use proper geometric notation to identify points, lines and angles • Describe the properties of triangles and quadrilaterals • Find missing angles at a point, on a straight line, within right angles, vertically opposite angles, triangles and quadrilaterals • Calculate and use the sums of the interior and exterior angles to find missing angles of regular and irregular polygons • Understand the angle properties and find missing angles in parallel and intersecting lines • Convert metric units (length, capacity, mass) • Find the perimeter and area of rectangles, parallelograms, triangles, trapeziums • Find the volume of cubes, cuboids and triangular prisms • Sketch nets of cuboids and prisms and know the properties of each shape	• Simplify ratios • Write diagrams as ratios in their simplest forms • Share in a given ratio • Use a ratio to find one quantity when the other is known • Write a ratio as a fraction • Write ratios in form 1:n • Work with Best Buys • Work with Recipe problems • Solve problems involving Speed, Distance, Time. • Solve speed, distance, time problems including changing units and converting compound units • Solve problems involving Density, Mass, Volume, include changes of units • Solve problems involving Pressure,	• Work with time Interpret timetables and work out time taken for a journey • Use information provided to complete a two-way table from a worded problem • Produce and interpret a composite bar chart - Find the total population, least/greatest values, mode and recognise patterns • Produce and interpret dual/comparative bar chart - Find the total population, least/greatest values, mode and recognise patterns • Produce and interpret a line graph including for time-series data • Produce and interpret a stem and leaf diagram Find mode, median and range from stem and leaf • Construct and interpret pie charts • Draw a scatter graph. Comment on the correlation and the relationship of the

• Convert between ordinary numbers and standard form • Perform calculations involving all four operations with standard form • Find the prime factor decomposition of positive integers and write as a product using index notation • Find the LCM and HCF of two numbers by listing • Use laws of indices to multiply and divide numbers written in index notation • Compare and order fractions by using a common denominator • Convert between mixed numbers and improper fractions • Add and subtract fractions with and without a common denominator • Multiply and divide fractions by fractions. • Recognise recurring decimals and convert fractions such as 3/7, 1/3 and 2/3 into recurring decimals • Express a given number as a percentage of another	• Solve simple two and three step linear equations with the unknown on one side • Solve linear equations which contain brackets • Solve linear equations with unknowns on both sides • Write an equation to solve a word problem • Show inequalities on number lines and write an inequality using a number line including listing integer values that satisfy the inequality • Solve linear inequalities with unknowns on both sides, and represent the solution set on a number line • Continue an arithmetic or geometric sequence and find the term-to-term rule, including negatives. • Find the nth term of an arithmetic sequence - Include increasing and decreasing • Use the nth term of an arithmetic sequence to generate terms. • Decide if a given number is a term in the sequence, or find the first term over a certain number • Plot or identify points needed to complete geometrical shapes in all four quadrants	• Find the surface area of a cube and a cuboid • Draw and read values from straight line graphs for real-life situations • Draw and interpret distance–time graphs, and calculate: the speed of individual sections, total distance and total time • Perform all four transformations accurately and be able to describe the four transformations on coordinate grids • Know and use Pythagoras' theorem to calculate the length of missing sides in right-angled triangles • Learn about the trigonometric ratios and be able to label a triangle • Use tan to find missing angles and sides • Use sine to find missing angles and sides • Use cosine to find missing angles and sides • Calculate the area and circumference of a circle • Work backwards to find a radius or diameter when given the area or circumference • Calculate the volume of a cylinder • Calculate the volume of a sphere using a given formula	Area, Force, include changes of units	variables. Understand correlation does not imply causation • Recognise types of data, e.g. Primary, secondary, discrete, continuous, qualitative, quantitative. • Understand how sources of data may be biased • Calculate the mode, median and range from a discrete frequency table including organising listed data into tables • Find mean from a discrete/ungrouped frequency table • Calculate the modal class, median class and range from a grouped frequency table • Find estimated mean from a grouped frequency table • Draw a frequency polygon from a table • Complete frequency trees • Draw a cumulative frequency diagram • Work with worded and numerical probability on probability lines. • Find the probability of a single event occurring using theoretical probability including listing outcomes

number Find a percentage of an amount • Calculate a percentage increase/decrease of a quantity/measurement • Calculate compound interest and depreciation • Calculate percentage change • Use index laws to simplify and calculate the value of numerical expressions involving multiplication and division of integer powers, including negatives • Evaluate numbers raised to the power zero, fractions and powers of a power • Find the reciprocal of an integer, decimal or fraction. • Evaluate when written as a negative power.	• Find the coordinates of the midpoint of a line segment • Recognise straight-line graphs parallel to the axes. Plot and draw graphs of $y = a$, $x = a$, $y = x$ and $y = –x$ • Plot and draw graphs of straight lines of the form $y = mx + c$ using a table of values • Identify and interpret gradient from an equation $y = mx + c$. Identify parallel lines from their equations • Find the equation of a straight line from a graph • Define a 'quadratic' expression Multiply simple double brackets • Factorise quadratic expressions of the form $x^2 + bx + c$ • Solve simultaneous equations algebraically, up to multiplying variables from both • Recognise a quadratic graph from its shape Generate points and plot graphs of simple quadratic functions	• Draw and interpret scale drawings including maps • Draw the plan, front and side elevations of 3D solids and sketch 3D shapes from plans and elevations • Accurately use a protractor to measure and draw angles, arcs and circles • Construct the bisector of a given line or angle • Use a straight edge, protractor and a pair of compasses to construct triangles • Find and describe regions satisfying a combination of loci • Use three-figure bearings to specify direction and work out the bearing from a given point • Understand and use the basic congruence criteria for triangles • Solve angle problems involving congruence • Understand similarity of shapes using scale factors and use to solve angle problems and find missing lengths • Be able to represent column vectors graphically • Calculate using column vectors, and represent graphically, the sum of two vectors, the difference of two vectors and a scalar multiple of a vector		• Record outcomes of probability experiments in tables. • Work out probabilities from frequency tables, include deciding if a coin, spinner or game is fair • Find a missing probability from a list or table using mutually exclusive outcomes, including algebraic terms • Estimate the number of times an event will occur, given the probability and the number of trials • Work out probabilities from two-way tables which have been partially completed. • Work out probabilities from Venn diagrams to represent real-life situations, include 'abstract' sets of numbers/values with union and intersection notation • Complete and use a frequency tree • Use and draw sample space diagrams • Complete basic probability tree diagrams of independent events with fractions, decimals and percentages. • Know the probabilities add to 1