Number 3

Number skills, Powers, Roots and Standard Form

	Pi	Theta	Delta	Sigma
Mastery	1) Add, subtract, multiply and divide negative numbers 2) Use negative numbers in context 3) Recognise prime numbers 4) Round to nearest integer, 10,100,1000, 1dp/2dp 5) Know the first 10 square numbers	6) Rounding to 1sf, 2sf 7) Using related calculations 8) Know the first 15 square numbers and their roots 9) Know the first 6 cube numbers 10) Use index notation 11) Find the prime factor decomposition of a number 12) Use prime factor decomposition to find HCF and LCM 13) Know and use basic index laws (Just numerical base)	1) Use prime factor decomposition to solve problems involving factors 2) Use index notation with fractional and negative powers 3) Use a combination of index laws to simplify 4) Write numbers in standard form and vice versa 5) Simplify surds	o Add, subtract, multiply and divide surds o Solve equations involving powers o Add, subtract, multiply and divide numbers written in standard form o UKMT problems

Algebra 3

Algebraic Manipulation, Equations, Formula and Sequences

	Pi	Theta	Delta	Sigma
Mastery	1) Factorising expressions 2) Substitute negative values into expressions 3) Substitute into more complex expressions involving brackets, powers and roots 4) Solve 2-step linear equations 5) Solve linear equations with integer coefficients (with brackets and negative numbers) 6) Solve linear equations with one unknown on each side of the equals sign 7) Know and use the basic index laws (algebraic base) 8) Know the difference between an arithmetic and geometric sequence and find missing terms	9) Solving equations resulting from an area or perimeter problem 10) Construct and solve equations with combinations of fractions, decimals, brackets and negative numbers. 11) Changing the subject of formulae (1 step) 12) Find and use the nth term of an arithmetic sequence	1) Changing the subject of formulae (2 or more steps) 2) Describe and find the nth term of a diagram sequence 3) Solve a pair of simultaneous linear equations by eliminating one variable.	o Find the nth term of a quadratic sequence o Show inequalities on number lines o Write down integer values that satisfy an inequality o Use the correct notation to show inclusive and exclusive inequalities o Solve simple linear inequalities in one variable, and represent the solution set on a number line o Solve two inequalities in x, find the solution sets and compare them to see which value of x satisfies both

Number 4

Fractions, Decimals, Percentages (Non-Calculator)

	Pi	Theta	Delta	Sigma
Mastery	1) Find equivalent fractions 2) Calculate fractions of quantities 3) Add and subtract fractions with different denominators 4) Order fractions (including the use of inequality signs) 5) Multiply simple fractions 6) Ordering decimals on a number line. 7) Understand and use decimal notation. 8) Recognise simple equivalence of percentages, decimals and fractions. (half, quarter, third, eighth, tenth, fifth) 9) Multiply and divide decimals by 10, 100 and 1000 10) Understand percentage as the number of parts per 100. 11) Calculate simple percentages (10%, 20%, 50%, 25%..etc.)	12) Divide fractions 13) Add, subtract, multiply and divide mixed numbers 14) Calculate percentages of amounts (Non – calc) 15) Understand the equivalence of more difficult fractions, decimals and percentages, including those greater than 1. 16) Multiply decimals 17) Divide decimals by whole numbers	1) Divide by a decimal 2) Find the outcome of a given percentage increase or decrease. 3) Calculate both simple and compound interest 4) Calculate a reverse percentage (just 50%, 25%, 10% or 5%)	o Algebraic fractions: simplify, add, subtract, multiply and divide o Use percentage multipliers for increase and decrease o Use percentage multipliers for compound and simple interest o Use a percentage multiplier to calculate a reverse percentage o UKMT problems ALL CALCULATOR

Algebra 4

Equations, Formula, Sequences and Graphs

	Pi	Theta	Delta	Sigma
Mastery	1) Changing the subject of formulae (1 step) 2) Solve equations (2-step) 3) Describe a sequence (arithmetic and geometric) 4) Find and use the nth term of an arithmetic sequence 5) Plot coordinates in all four quadrants 6) Generate coordinate points for a linear function 7) Plot graphs of linear functions, where y is given in terms of x 8) Find the gradient of a line from a graph	9) Changing the subject of formulae (2 or more steps) 10) Investigate the relationship between a graph and it's equation 11) Understand that equations in the form y = mx + c represent a straight line and that m is the gradient and c is the value of the y -intercept 12) Find the equation of a line given the gradient and y-intercept 13) Identify (not find) the equations of straight-line graphs that are parallel 14) Plot and interpret the graphs of simple linear functions arising from real-life situations, e.g. conversion graphs 15) Interpret and draw Distance-time graphs	1) Find the equation of a parallel line given a point 2) Find the gradient from 2 points 3) Find the equation of a straight-line graph, given two points 4) Find the equation of a perpendicular line	o Quadratic Graphs o Show the solution set of inequalities in two variables on a graph o Finding maximum and minimum points from a quadratic graph o Plot cubic graphs

Statistics 1

Collecting, Processing and Presenting Data

	Pi	Theta	Delta	Sigma
Mastery	1) Find the mean, mode, median and range from a list of numbers 2) Compare two simple distributions, in context, using the range and an average 3) Construct and interpret pictograms 4) Construct and interpret pie charts 5) Construct and interpret bar charts (including composite and comparative) and frequency diagrams 6) Draw and interpret stem and leaf diagrams for discrete data 7) Draw a scatter graph and line of best fit	8) Find the mean, mode and range from a simple frequency table 9) Identify the modal group from a grouped frequency table 10) Find an estimate for the mean from grouped continuous data 11) Appreciate that correlation is a measure of the strength of association between two variables; distinguish between positive, negative and zero correlation 12) Use lines of best fit to make estimates	1) Select and justify a sampling method from random and stratified sampling 2) Find the IQR from a list of discrete data 3) Identify the median from a frequency table 4) Identify the median class from a grouped frequency table 5) Comment on the most useful average to use in various situations 6) Worded problems involving finding the missing data value and combined mean 7) Use stem and leaf diagrams to find the median and IQR of a set of discrete data 8) Draw a box plot from raw data	o Draw cumulative frequency tables and cumulative frequency diagrams o Draw a box plot, from a cumulative frequency curve or data o Interpret and use cumulative frequency diagrams to solve problems, including finding the IQR o Construct histograms, including those with unequal class intervals o Use, interpret and compare histograms, including those with unequal class intervals o Carry out a handling data project

Statistics 2

Probability

	Pi	Theta	Delta	Sigma
Mastery	1) Write probabilities using fractions 2) Understand and use the probability scale from 0 to 1 3) List all possible mutually exclusive outcomes for single events 4) Know that the sum of probabilities of all mutually exclusive outcomes is 1	5) Understand relative frequency as an estimate of probability 6) Understand that an increase in sample size improves reliability of relative frequency 7) Complete two-way tables 8) Find probabilities from two-way tables 9) Draw Frequency trees 10) Draw and use a sample space diagrams 11) Use a simple Venn diagram to show elements in a set 12) Draw and label a Venn diagram to represent the intersection or union of two sets 13) Work out probabilities from a basic Venn diagram	1) Draw and use probability tree diagrams to represent outcomes of two events and to calculate probabilities of combinations of independent events 2) Know when to add or multiply two probabilities 3) Solving problems with both probability and ratio and proportion. 4) Define a set and list elements of a set, using proper notation 5) List the union and intersection of two or three sets using proper notation 6) Draw and use Venn diagrams of three sets to calculate probabilities	o Conditional Probability with tree diagrams o Use a Venn diagram to calculate conditional probability (probability of B given A) o Combinations and permutations