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| Okehampton College Curriculum Overview: KS3 Mathematics –Bold text denotes core strand only, blue text denotes higher strand only | Reviewed/Updated Oct/2018 by SLCUpdated Oct/2019 by TN/SLCUnder review 04/22 GIB/SLCUnder review 12/22 SV |
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| Term | Year 7 (WRM)  | Year 8 (WRM)  | Year 9 (Pre-GCSE)  |
| 1 | **Sequences*** To continue and describe numerical and pictorial sequences
* Represent sequences in tabular and graph form
* Geometric and arithmetic sequences
* Use term to term rule
* Find missing numbers within sequences
* POST topic test

**Understanding and using algebraic notation*** Rule of algebra
* Single and double function machines
* Use inverse operations
* Substitute into expressions
* Generate sequences given an algebraic rule
* Represent functions graphically
* POST topic test

**Equality and equivalence*** Understand the use of =
* Use fact families
* Solve one step linear equations
* Like and unlike terms
* Simplifying by collecting like terms
* POST topic test
 | **Ratio and Scale*** PRE topic test
* Use ratio notation
* Divide by a given ratio
* Express ratios in the form 1:n
* Compare ratios and related fractions
* Use π as a ratio in circumference calculations
* To calculate the gradient of a straight line
* POST topic test

**Multiplicative Change*** Direct proportion
* Conversion graphs
* Similar shapes
* Scale factors
* Scale diagrams
* Using Maps
* Direct proportion graphs
* POST topic test

**Multiplying and Dividing Fractions*** PRE topic test
* Multiply a fraction by an integer
* Product of a pair of any fractions
* Divide an integer by a fraction
* Divide a fraction by a fraction
* Understand and use reciprocal
* Multiply and divide improper and mixed fractions
* Multiply and divide algebraic fractions
* POST topic test
 | **Algebra: the basics*** Manipulate and simplify expressions
* Use index notation and laws
* Expand a single bracket and expand two single brackets and simplify
* Factorise into a single bracket
* Expand and simplify double brackets
* Factorise quadratic expressions into double brackets.
* Topic test

**Graphs, tables and charts*** Two-way tables````````````````
* Stem and leaf
* Scatter graphs
* Estimating mean from grouped data
* Cumulative frequency graphs
* Topic test
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| 2 | **Place Value** * Place Value up to one billion
* Position integers on number line
* Compare numbers using =. ≠, < and >
* Order a list of integers
* Calculate the range of a set of numbers
* Calculate the median of a set of numbers
* Understand place value for decimals
* Position decimals on a number line
* Round to 1 significant figure
* Use Standard Index Form
* Ordering integers and decimals
* POST topic test

**Fraction, decimal and percentage equivalence*** Represent fractions as diagrams and on number lines
* Equivalent fractions
* Fractions as division
* Convert between fractions, decimals and percentages
* Fractions above 1
* Pie charts
* End of Autumn term assessment
 | **The Cartesian Plane*** PRE topic test
* Coordinates in all four quadrants
* Identfiy and draw simple lines
* Recognise and use lines of the form y = kx
* Explore the gradient of lines y = kx
* Recognise and use lines of the form y = x + a and y = ,x + c
* Graphs with negative gradient
* Non-linear graphs
* Midpoints of line segments
* POST topic test

**Representing Data*** Draw and interpret scatter graphs
* To understand linear correlation
* Use lines of best fit
* Discrete versus continuous data
* Ungrouped frequency tables
* Grouped frequency tables
* Two way tables
* POST topic test

**Tables and Probability*** Construct and use sample spaces
* Find probabilities from two-way tables
* Find probabilities from Venn diagrams
* Use the product rule
* End of Autumn term assessment
 | **Number*** Calculations with negative numbers
* Multiply and divide by powers of 10
* Multiplying decimals
* Rounding to decimal places and significant figures
* Index laws including negative
* Standard form
* Topic test

**Fractions*** Four operations with fractions and mixed numbers
* Convert between recurring decimals and fractions
* End of Autumn term assessment

**Geometry*** **Angle properties of shapes and parallel lines**
* Pythagoras theorem
* Topic test
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| 3 | **Addition and Subtraction*** Mental strategies for integers and decimals
* Formal strategies for integers and decimals
* Choosing appropriate method
* Perimeter problems
* Financial Maths
* Frequency trees
* Bar charts and line graphs
* POST topic test

**Multiplication and Division*** Factors and multiples
* Multiply and divide integers and decimals
* Convert metric units
* Multiply by 0.1 and 0.01
* Order of operations
* Area of rectangles, parallelograms
* Area of triangles
* Area of trapezia
* Solve problems involving the mean
* POST topic test

**Fractions and percentages of amounts*** Fraction of amounts
* Percentages of amounts without a calculator
* Percentages of amounts with a calculator
* Problems with fractions greater than 1
* POST topic test
 | **Brackets, Equations and Inequalities*** PRE topic test
* Form algebraic expressions
* Using directed numbers with algebra
* Expanding single brackets
* Factorise into a single bracket
* Expand two single brackets and simplify
* Expand a pair of binomials
* Solve equations involving brackets
* Forming and solving equations
* Forming and solving inequalities
* Solving equations with unknowns on both sides
* Identify and use expressions, identities, formulae and equations.
* POST topic test

**Sequences*** Generate sequences given an algebraic rule
* Finding the nth term of a given sequence both numerical and pictorial
* POST topic test

**Indices*** Use all four operations with indices
* Laws of indices (multiply and divide)
* Index rule for powers of powers
* POST topic test
 | **Algebra*** Solving linear equations
* Simultaneous equations
* Topic test

**Percentages*** **Converting between fractions, decimals, percentages**
* Calculating percentages of quantities including using a multiplier
* Percentage increase, decrease, profit, simple interest, reverse percentages
* Topic test

**Surface area and volume*** Area of rectangle, triangle, parallelogram, trapezium and circle
* Surface area and volume of cuboids, prisms, cylinders and composite shapes
* Topic test
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| 4 | **Directed Number*** Order and compare directed numbers
* Calculations that cross zero
* Multiplication and division of directed numbers
* Evaluate algebraic expressions with directed number
* Two step equations
* POST topic test

 **Fractional Thinking*** Convert between mixed numbers and fractions
* Add and subtract fractions with same denominator
* More equivalent fractions
* Add and subtract fractions with any denominator
* Add and subtract improper fractions and mixed numbers
* End of Spring term assessment
 | **Fractions and percentages*** PRE topic test
* Convert fluently between fractions, decimals, and percentages.
* Use of a multiplier to find percentages and to increase/decrease amounts.
* Express a number as a proportion of another number
* Percentage change
* Reverse percentage problems
* POST topic test

**Standard Index Form*** Write large and small numbers in standard form.
* Calculate sums in SF both mentally and with calculator.
* Multiply and divide in SF using index rules
* Negative and fractional indices
* POST topic test

**Number Sense*** Rounding numbers (recap)
* Estimation
* Error Intervals
* Order of operations (recap)
* Converting metric measures
* Converting metric measures for area and volume
* Solve money problems
* Solve problems involving time and the calendar
* End of spring term assessment
 | **Sequences*** Linear sequences including nth terms
* Fibonacci type sequences
* Topic test

**Angles in polygons*** Angle sums, interior and exterior angles
* Topic test

**Speed and compound measures*** Draw and interpret speed, distance, time graphs
* Use of formulae for speed, density and pressure
* End of Spring term assessment
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| 5 | **Constructing, measuring and using geometric notation.*** To know and use labelling conventions
* Classify, measure and draw angles
* Parallel and perpendicular lines
* Types of triangles
* Types of quadrilaterals
* Know polygons up to a decagon
* Construct triangles using SSS, SAS and ASA
* Interpret and draw pie charts
* POST topic test

**Developing geometric reasoning*** Sum of angles at a point
* Sum of angles on a straight line
* Vertically opposite angles
* Angle sum of any triangle
* Angles sum of any quadrilateral
* Properties of triangles and quadrilaterals
* POST topic test
 | **Angles in parallel lines and polygons*** Understand and use basic angle rules and notation
* Investigate angles between parallel lines and the transversal.
* Identify and calculate with co-interior, alternate and corresponding angles.
* Constructions triangles and special quadrilaterals
* Know and use properties of special quadrilaterals including diagonals
* Understand and use the sum of the interior angles and the sum of the exterior angles in any polygon.
* Calculate missing interior angles in regular polygons.
* Construct perpendicular bisector of a line segment.
* Construct an angle bisector
* POST topic test

**Area of trapezia and circles*** PRE topic test
* Calculate the area of triangles, rectangles and parallelograms.
* Calculate the area of a trapezium.
* Calculate the area and perimeter of compound shapes.
* Calculate the area of a circle and parts of a circle with and without a calculator.
* POST topic test

**Line symmetry and reflection*** Recognise line symmetry
* Reflect shapes in horizontal, vertical and diagonal lines either with shapes touching the line or not touching the line.
* POST topic test
 | **Multiplicative reasoning*** Write, simplify and share in a ratio
* Best buy problems
* Repeated proportional change (compound interest)
* Use and conversion of compound measures
* Topic test

**Triangles*** **Pythagoras theorem**
* Investigate similar triangles
* Introduction to trigonometry
* Using trigonometric ratios to find unknown sides and angles and to solve problems
* Topic test

**Graphs*** Drawing straight line graphs
* Use of y = mx + c and ax + by = c
* Solving simultaneous equations graphically
* Plot quadratic and cubic graphs
* Solve quadratic equations by graph
* Topic test
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| 6 | **Developing number sense*** Recap mental and formal calculation methods
* To use estimation
* Using factors to simplify calculations
* POST topic test

**Sets and probability*** Identify and represent sets
* Interpret and create Venn diagrams
* Understand and use the intersection and union of sets
* Understand and use the complement of a set
* Know and use the vocabulary of probability
* POST topic test

**Prime numbers and proof*** Recognise and identify prime numbers
* Recognise square and triangular numbers
* Find HCF and LCM of sets of numbers
* Use Venn diagram to calculate the HCF and LCM
* Make and test conjectures
* Use counterexamples to disprove a conjecture
* End of year assessment
 | **The data handling cycle*** PRE topic test
* Set up a statistical enquiry
* Design and criticise questionnaires
* Draw and interpret pictograms, bar charts and vertical line charts.
* Draw and interpret multiple bar charts, pie charts and line graphs.
* Choose the most appropriate diagram for given set of data.
* Represent and interpret grouped quantitative data
* Find and interpret the range
* Compare distributions using charts
* Identify misleading graphs
* POST topic test

**Measures of Location*** Understand the mean, median and mode
* Choose the most appropriate average
* Find the mean from an ungrouped frequency table.
* Find the mean from a grouped frequency table.
* Identify Outliers
* Compare distributions using averages and the range.
* End of year assessment
 | **Algebra*** **Review algebra topics**
* **Expand two brackets**
* Four operations with simple algebraic fractions
* Linear inequalities including graphical representation
* Expand 3 brackets
* Topic test

**Circles*** **Naming of parts, circumference and area**
* **Volume and surface area of cylinders**
* Arc length and area of sectors
* Topic test

**Probability*** **Use language of probability and calculate probabilities using relative frequency**
* Use theoretical probability
* Tree diagrams and Venn diagrams

**Revision for end of year test**End of year assessment**Preparation for GCSE** |