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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 SLC  Updated Oct/2019 by TN/SLC  Under review 04/22 GIB/SLC  Under 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 |
| 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 |
| 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 |
| 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** |