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| **Our Lady Queen of Peace**  Catholic Engineering College | Curriculum Overview |
| Year 7 Maths | |

| Knowledge & Understanding | | | | | | **Cultural Capital / Enrichment Opportunities** |
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|  | **Composites**  **(Bigger Picture)** | **Components**  **(Key Concepts)** | **Links to NC** | **Recall & Retrieval Practice Focus** | **Key Vocabulary** |
| **Half Term 1** | Algebraic Notation & Substitution | - Understand algebraic notation  - Form expressions – coefficients as fractions included  - Substitute positive integers into expressions & formulae  - Substitute negative integers, positive fractions & decimals into expression & formula  - Use formulae to find unknown variables  - Making links to BIDMAS | Algebra | Recall starter: last lesson and remember more (based on KS2 prior).  KS2: Use simple formulae (perimeter), describe linear sequences, number pairs to solve equations  Non-Statutory: a + b = b + a, number problems.  Convert units (km to m), perimeter and area by counting squares, recognize when to use formulae for area and volume, area of parallelograms and triangles  Non-Statutory: Use area to find unknown lengths. | Expression – A mixture of numbers, symbols and operators without an equal sign.  Term – a component of an expression: a number, variable, or coefficient with a variable.  Variable – A symbol for a value we don’t know yet.  Substitution – Replacing a variable for a number. | Introduction to formulae. Use of scientific formula. |
| Area, Perimeter and Volume | - Using formula for area and perimeter of squares, rectangles, triangles, parallelograms and trapeziums  - Extending knowledge of area and perimeter to composite shapes  - Finding the volume of cubes, cuboids and other prisms | Geometry | Perpendicular – at right angles  Parallel  Trapezium  Parallelogram  Cuboid  Cube  Prism  Composite/Compound |
| **Half Term 2** | Working with Ratio | - Understand what ratios are and be able to write quantities in a ratio  - Simplification of ratios  - Knowledge of equivalence between ratios, fractions and decimals  - Conversion between ratios and fractions  - Share a quantity into a given ratio  - Calculate the total or a part of a ratio when only given a ratio and one part | Ratio and Proportion | Recall starter: last lesson and remember more (based on KS2 prior and Interim 1 QLA).  KS2: Share into groups of equal sizes, solve problems involving missing values by multiplication or division.  Interpret and construct tally charts, calculate the mean  Non-Statutory: Pupils know when it is appropriate to find the mean of a data set | Equivalent – Having the same value.  Simplify – to express a quantity in its lowest integer form.  Parts  Whole | Link to real world problems with money, sharing resources, recipes.  Golden ratio and beauty standards. |
| Averages & Spread | - Calculate mean, median, mode from a list  - Calculate the range from a list  - Generate lists of numbers given constraints including range, median, mean  - Use an appropriate average and range to compare data sets  - Calculate averages from bar charts  - Calculate the mean from a frequency table  - Calculate mean & modal class from grouped frequency tables | Statistics | Mean – A calculated average of a set of numbers  Mode – The most frequent appearing value  Median – The middle of a sorted list of numbers  Range – The difference between the lowest and highest value.  Compare |  |
| **Half term 3** | Working with Directed Numbers & Decimals | - Understand and use place value for decimals and integers of any size  - Use the knowledge of place value to order integers and decimals  - Add & Subtract decimals  - Divide decimals by integers  - Understand the idea of a “negative number”  - Be able to order positive and negative numbers  - Multiply & Divide negative numbers  - Multiply decimals together  - Divide decimals by other decimal numbers | Number | Recall starter: last lesson and remember more (based on KS2 prior and Interim 2/Midyear assessment QLA).  KS2: read, write, order and compare numbers up to 10 000 000 and determine the value  of each digit, Use negative numbers in context, and calculate intervals across zero, solve number and practical problems that involve all of the above | Integer – A whole number  Inequality – Compares two values that may or may not be equal  Negative |  |
| Algebraic Manipulation | - Understand key terminology, expression, equation, inequality, term  - Simplification by adding & subtracting like terms  - Expand & Simplify single brackets  - Factorise an expression with a term as the HCF  - Expand & Simplify double brackets  - Factorise quadratics using the product & sum method | Algebra | Expand – To remove brackets using multiplication  Factorise – To find a common factor of an algebraic expression  “like” terms  Simplify |
| **Half term 4** | Units of Measurement | - Identify the correct unit of measurement for mass, length, area, capacity, time and money  - Convert between standard units of mass, length, capacity and time  - Use of compound units (speed distance density)  - Convert between units of area & volume | Geometry | Recall starter: last lesson and remember more (based on Interim and Midyear assessment QLA). | Units – A quantity used in measurement.  Capacity – The amount that something can hold.  Mass  Length |  |
| Properties of Shapes & Angles | - Derive and illustrate properties of 2D shapes  - State and draw lines of symmetry and rotations for regular and irregular polygons  - Know and be able to determine the number of faces, edges and vertices for 3D shapes  - Apply properties of angles at a point, on a straight line and vertically opposite angles to find missing values  - Draw lines and angles accurately  - Use properties of parallel lines including corresponding, alternative and co-interior angles | Faces – The sides of a 3D shape  Vertices – A corner of a shape  Edges – A line joining two vertices  Vertically opposite  Corresponding  Co-interior  Alternate |
| **Half term 5** | Working with Fractions | - Identify fractions of shapes and recognise fractions that are less than or greater than 1  - Be able to find equivalent fractions and use this to order them by size  - Be able to simplify fractions  - Conversion between improper fractions and mixed numbers  - Calculate fractions of quantities  - Apply the four operations to fractions less than 1  - Express one quantity as a fraction of another | Number | Recall starter: last lesson and remember more (based on Interim QLA). | Numerator – The top number in a fraction  Denominator – The bottom number in a fraction  Improper – Where the numerator is larger than the denominator  Vinculum – the fraction line  Reciprocal – 1/fraction |  |
| Working with Probability | - Use the language of probability to describe events and place them on a probability scale  - Record and analyse the outcomes of a probability experiment  - Calculate the probability of an event happening  - Create sample space diagrams and lists to find all outcomes of an experiment and use this to calculate the probability of an event happening including two-way tables  - Understand that all probabilities must add to 1 and use this to find missing probabilities or the probability of an event not happening | Probability | Outcome – A possible result of an experiment  Sample – A small part taken from a large group  Events – One or more outcomes of an experiment. | Birthday paradox. |
| **Half term 6** | Working with Sequences | - Recognise special sequences including square numbers, cube numbers, triangular numbers and the Fibonacci sequence  - Recognise sets of infinite numbers including real, integers and rational numbers  - Describe the sequence in terms of the term-to-term rule  - Use the term-to-term rule to generate a sequence or continue a sequence  - Understand the purpose of a position to term rule and use this to generate terms of a sequence  - Calculate the position to term rule (nth term) for linear sequences | Algebra | Recall starter: last lesson and remember more (based on Interim and EOY assessment QLA). | Term – The values that make up a sequence  Linear – A sequence that changes by a common difference  Fibonacci  Geometric |  |
| Representing Data visually | - Be able to draw and interpret stem and leaf diagrams.  - Be able to draw and interpret bar charts, including dual bar charts.  - Be able to draw and interpret frequency tables.  - Be able to draw and interpret pictograms.  - Be able to draw pie charts | Statistics | Stem and Leaf – Diagram to represent numerical data.  Pictogram – Represents data using pictures  Frequency – How often something happens (total of the tally’s) | Link to representation of data in the media and “fake” news. How can data be misrepresented and why? |

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| Key Assessments | | | |
| **When** | **What will be assessed?** | **Why is this being assessed?** | **How will results be stored & students receive feedback?** |
| Interim 1 (HT1) | Algebraic notation: identifying a term, variable or expression; simplifying notation; writing expressions; substituting variables into expressions (including decimals and fractions); finding a missing variable from a formulae. | Assess the key foundations to inform class progress and areas for development.  Component questions to assess understanding and progression in knowledge. Composite questions to apply knowledge learnt and identify component gap to address. | Teacher marks, results stored on SIMs. Fix It lesson for induvial quick fixes, reteach lesson for larger topics. |
| Interim 2 (HT2) | Area, Perimeter, Volume: derive and apply the formula for 2D and 3D shapes; find the area and perimeter of compound shapes; find the size of missing lengths in area and volume questions.  Ratio: be able to write and simplify ratios; write a part of a ratio as a fraction of the whole; share a total into a given ratio; calculate with a ratio when given one part. |
| Interim 3 (HT3) | Averages from data and charts: finding averages (MMMR) from listed data; finding missing values when given an average; find averages from given statistical diagrams (frequency tables and bar charts).  Directed Numbers and Decimals: Understand place value of a given number; order numbers and use inequality signs to order, operations with decimals. |
| Interim 4 (HT4) | Algebraic manipulation: terminology; simplifying expression by collect like terms, expand and factorise single brackets, expand and factorise double brackets, laws of indice.  Unit conversion: convert between standards units of mass, length, capacity and time. Using compound units, convert units of area and volume. |
| Interim 5 (HT6) | Properties of Shapes and Angle Reasoning: Name properties of 2D shapes; apply the properties of angles at a point, on a straight line, and vertically opposite; find missing angles in special triangles; identify types of angles in parallel lines.  Fractions: operations with fractions; ordering and comparing fractions; find a fraction of a given amount; express a quantity as a fraction of another. |
| Midyear Assessment | Assess all content across the Y7 scheme covered at time of assessment. | Summative assessment to assess the students understanding of and their retention of the topics taught. Progress tracked against expectations and intervention put in place where needed. This information will be used to inform the topics that make up the recall and retention starter activities. | Teacher marks, results stored on SIMs. Fix It lesson for induvial quick fixes, reteach lesson for larger topics.  Possible retest after optional sessions to correct misconceptions.  Students self-fill a Success Criteria to identify areas of strength and development moving forward. |
| End of Year Assessment |
| Topic Tasks  (aprrox. 10) | Assess recently learnt topics over the last 3-4 weeks. | More formal formative assessment to track the understanding and retention of students with recently learnt topics to better impact long term progress and possession of knowledge. | Teacher marked with areas of success and development highlighted for students. Students address small misconceptions with a Fix It, larger gaps across the class are given a reteach lesson. |