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| **Year 8 Curriculum Overview [2024-2025]** **Mathematics**  |
|  **Autumn Term** | **Knowledge & Understanding** | **Literacy Skills****Opportunities for****developing** **literacy skills** | **Employability Skills****[if any]** | **Assessment Opportunities** |
| **Composites** | **Components****[KEY concepts & subject specific vocab]** | **Formal Retrieval****[if any]** |
| **HT1** | **Ratio and Scale** | * Understanding the meaning and representation of ratio
* Understand and use ratio notation
* Solve problems involving ratios of the form 1:n or n:1
* Solve proportional problems involving the ratio m:n
* Divide a value into a given ratio
* Express ratios in their simplest integer form
* **H - Express ratios in the form 1:n**
* Compare ratios and related fractions
* Understand pi as the ratio between diameter and circumference
* **H - Understand gradient of a line as a ratio**
 | * Retrieval in class starter
* Prior knowledge whiteboard questions
* End of Topic Unit Test Intervention lessons using knowledge organiser material
 | * Key Vocabulary in Retrieval starters
* Encourage use of subject language
* Questioning
* Pupil explanations and reasoning
* True and False Tasks
* Problem Solving Tasks
* Blooms Questioning Tasks
 | * Personal skills- Thinking and problem solving- Working together and communicating
* Fundamental skills- Using numbers effectively- Using language effectively

- Using a calculator effectively.• Chef • Working in the catering industry • Business • Architecture • Surveyor • Financial • Currency exchange • Hair dressers • Medical •Business • Construction work • Retail • Hotel and catering | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
 |
|  | **Multiplicative Change** | * Solve problems involving direct proportion
* Explore conversion graphs
* Convert between currencies
* **H - Explore direct proportion graphs**
* Explore relationships between similar shapes
* Understand scale factors as multiplicative relationships
* Draw and interpret scale diagrams
 |
|  | **Multiplying and Dividing Fractions** | * Interpret maps using scale factors and ratio
* Represent multiplication of fractions
* Multiply a fraction by an integer
* Find the product of a pair of unit fractions
* Find the product of a pair of any fractions
* Divide an integer by a fraction
* Divide a fraction by a unit fraction
* Understand and use the reciprocal
* Divide any pair of fractions
* **H - Multiply and divide improper and mixed fractions**
* **H - Multiply and divide algebraic fractions**
 |
| **HT2** | **Working in a Cartesian Plane** | * Work with coordinates in all four quadrants
* Identify and draw lines that are parallel to the axes
* Recognise and use the line y=x
* Recognise and use lines of the form y=kx
* Link y=kx to direct proportion problems
* **H - Explore the gradient of the line y=kx**
* Recognise and use lines of the form y=x+a
* Explore graphs with negative gradients (y=-kx, y=a-x, x+y=a)
* Link graphs to linear sequences
* Plot graphs of the form y=mx+c
* **H - Explore non-linear graphs**
* **H - Find the midpoint of a line segment**
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- Using a calculator effectively.* Jobs that require a statistics background
* Data Analyst.
 | * Plenary True and False Tasks
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 |
|  | **Representing Data** | * Draw and interpret scatter graphs
* Understand and describe linear correlation
* Draw and use line of best fit (1)
* Draw and use line of best fit (2)
* Identify non-linear relationships
* Identify different types of data
* Read and interpret ungrouped frequency tables
* Read and interpret grouped frequency tables
* Represent grouped discrete data
* Represent continuous data grouped into equal classes
* Represent data in two-way tables
 |
|  | **Tables and Probability** | * Construct sample spaces for 1 or more events
* Find probabilities from sample space
* Find probabilities from two-way tables
* Find probabilities from Venn diagrams
* **H - Use the product rule for finding the total number of possible outcomes**
 |
|  | **Brackets, Equations and Inequalities** | * Form algebraic expressions
* Use directed number with algebra
* Multiply out a single bracket
* Factorise into a single bracket
* Expand multiple single brackets and simplify
* H - Expand a pair of binomials
* Solve equations, including with brackets
* Form and solve equations with brackets
* Understand and solve simple inequalities
* Form and solve inequalities
* **H - Solve equations and inequalities with unknowns on both sides**
* **H - Form and solve equations and inequalities with unknowns on both sides**
* Identify and use formulae, expressions, identities and equations
 | * Retrieval in class starter
* Prior knowledge whiteboard questions

End of Topic Unit Test Intervention lessons using knowledge organiser material | * Key Vocabulary in Retrieval starters
* Encourage use of subject language
* Questioning
* Pupil explanations and reasoning
* True and False Tasks
* Problem Solving Tasks

Blooms Questioning Tasks | * Personal skills- Thinking and problem solving- Working together and communicating
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- Using a calculator effectively.* Medical
 | * Plenary True and False Tasks
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* Feedback and reflective practise

End of Topic Tests |
| **Catholicity across the curriculum:****Ratio and scale:** The development of proportional thinking allows pupils to develop a strong skillset required for their future career paths. Using scales for measurement for example, and how this applies to real life where they can contribute as valuable members of society and work towards the common good.**Tables and Probability:** Constructing tables and analysing data from these tables can help to understand social issues and make informed decisions. By analysing data through tables, pupils can better address inequalities and promote justice within society, aligning with the principles of solidarity and the dignity of every person**Brackets, Equations and Inequalities:** Pupils encounter many challenges when attempting to understand the abstract concepts of algebra. From this, they build resilience and growth mindset which corresponds with human dignity and how pupils view themselves. Students are encouraged to explore different strategies to help them solve problems promoting independence. |
| **Year 8 Curriculum Overview [2024-2025]** **Mathematics** |
| **Spring****Term** | **Knowledge & Understanding** | **Literacy Skills****Opportunities for****developing** **literacy skills** | **Employability Skills****[if any]** | **Assessment Opportunities** |
| **Composites** | **Components****[KEY concepts & subject specific vocab]** | **Formal Retrieval****[if any]** |
| **HT3** | **…continued****Brackets, Equations and Inequalities** | * Form algebraic expressions
* Use directed number with algebra
* Multiply out a single bracket
* Factorise into a single bracket
* Expand multiple single brackets and simplify
* H - Expand a pair of binomials
* Solve equations, including with brackets
* Form and solve equations with brackets
* Understand and solve simple inequalities
* Form and solve inequalities
* **H - Solve equations and inequalities with unknowns on both sides**
* **H - Form and solve equations and inequalities with unknowns on both sides**
* Identify and use formulae, expressions, identities and equations
 | * Retrieval in class starter
* Prior knowledge whiteboard questions
* End of Topic Unit Test Intervention lessons using knowledge organiser material
 | * Key Vocabulary in Retrieval starters
* Encourage use of subject language
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* True and False Tasks
* Problem Solving Tasks
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 | * Personal skills- Thinking and problem solving- Working together and communicating
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- Using a calculator effectively.* Medical
 | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
 |
|  | **Sequences** | * Generate sequences given a rule in words
* Generate sequences given a simple algebraic rule
* Generate sequences given a complex algebraic rule
* **H - Find the rule for the nth term of a linear sequence**
 |
|  | **Indices** | * Adding and subtracting expressions with indices
* Simplifying algebraic expressions by multiplying indices
* Simplifying algebraic expressions by dividing indices
* Using the addition law for indices
* Using the addition and subtraction laws for indices
* **H - Exploring powers of powers**
 |
| **HT4** | **Fractions and Percentages** | * Convert between decimals and percentages more than 1/100%
* Percentage decrease with a multiplier
* Calculate percentage increase and decrease using a multiplier
* Express one number as a fraction or a percentage of another without a calculator
* Express one number as a fraction or a percentage of another using calculator methods
* Work with percentage change
* Choose appropriate methods to solve percentage problems
* **H - Find the original amount given the percentage less than 100%**
* **H - Find the original amount given the percentage more than 100%**
* **H - Choose appropriate methods to solve complex percentage problems**
 | * Retrieval in class starter
* Prior knowledge whiteboard questions
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- Using a calculator effectively.* Business
* Retails
* Computing
* Textiles
 | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
 |
|  | **Standard Index Form** | * Work with numbers greater than 1 in standard form
* Investigate negative powers of 10
* Work with numbers between 0 and 1 in standard form
* Compare and order numbers in standard form
* Mentally calculate with numbers in standard form
* Add and subtract numbers in standard form
* Multiply and divide numbers in standard form
* Use a calculator to work with numbers in standard form
* **H - Understand and use negative indices**
* **H - Understand and use fractional indices**
 |
|  | **Number Sense** | * Round numbers to a number of decimal places
* H - Understand and use error interval notation
* Calculate with money
* Convert metric units of weight and capacity
* **H - Convert metric units of area**
* **H - Convert metric units of volume**
* Solve problems involving time and the calendar
 | * Retrieval in class starter
* Prior knowledge whiteboard questions

End of Topic Unit Test Intervention lessons using knowledge organiser material | * Key Vocabulary in Retrieval starters
* Encourage use of subject language
* Questioning
* Pupil explanations and reasoning
* True and False Tasks
* Problem Solving Tasks

Blooms Questioning Tasks | * Personal skills- Thinking and problem solving- Working together and communicating
* Fundamental skills- Using numbers effectively- Using language effectively

- Using a calculator effectively.* Construction
* Surveyor
* Architecture
* Carpet fitter
* Decorator
 | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
 |
| **Catholicity across the curriculum:****Sequences:** Pupils are shown the importance of specific order and pattern. This is then applied to social justice, which also requires a structured approach to ensure every individual is treated fairly and that their rights are upheld consistently over time (the value of human dignity).**Indices:** Using standard index form, pupils are taught to express large numbers and better understand how to manage quantities. This relates to the distribution of resources and responsible stewardship in regard to this, ensuring we promote equity and sustainability in our communities.**Number sense:** This topic involves recognising relationships and patterns of numbers. This concept is then applied to valuing every individual and the importance of understanding, fostering a deeper understanding of human dignity and social relationships. Exploring the relationships of metric units and calculating with money allows for students to apply maths to real life concepts, including how these can contribute to the common good. |
| **Year 8 Curriculum Overview [2024-2025]** **Mathematics** |
| **Summer** **Term** | **Knowledge & Understanding** | **Literacy Skills****Opportunities for****developing** **literacy skills** | **Employability Skills****[if any]** | **Assessment Opportunities** |
| **Composites** | **Components****[KEY concepts & subject specific vocab]** | **Formal Retrieval****[if any]** |
| **HT5** | **…continued****Number Sense** | * Round numbers to a number of decimal places
* H - Understand and use error interval notation
* Calculate with money
* Convert metric units of weight and capacity
* **H - Convert metric units of area**
* **H - Convert metric units of volume**
* Solve problems involving time and the calendar
 | * Retrieval in class starter
* Prior knowledge whiteboard questions
* End of Topic Unit Test Intervention lessons using knowledge organiser material
 | * Key Vocabulary in Retrieval starters
* Encourage use of subject language
* Questioning
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 | * Personal skills- Thinking and problem solving- Working together and communicating
* Fundamental skills- Using numbers effectively- Using language effectively

- Using a calculator effectively.* Construction
* Surveyor
* Architecture
* Carpet fitter
* Decorator
 | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
 |
|  | **Angles in parallel lines** | * R - Understand basic angle rules and notation
* Investigate angles between parallel lines and the transversal
* Identify and calculate with alternate and corresponding angles
* Identify and calculate with co-interior, alternate and corresponding angles
* Solve complex problems with parallel line angles
* Construct triangles and special quadrilaterals
* Identify and calculate with sides and angles in special quadrilaterals.
* **H - Understand and use the properties of diagonals of quadrilaterals**
* Understand and use the sum of exterior angles of any polygon
* Understand and use the sum of interior angles of any polygon
* Calculate missing interior angles in regular polygons
* **H - Prove simple geometric facts**
* **H - Construct an angle bisector**
* **H - Construct a perpendicular bisector of a line segment**
 |
|  | **Area of Trapezia and Circles** | * Calculate the area of a trapezium
* Calculate the perimeter and area of compound shapes (1)
* Calculate the circumference of a circle
* Investigate the area of a circle
* Calculate the area of a circle and parts of a circle without a calculator
* Calculate the area of a circle and parts of a circle with a calculator
* Calculate the perimeter and area of compound shapes (2)
 |
| **HT6** | **Line Symmetry and Reflection** | * Recognise line symmetry
* Reflect a shape in a horizontal or vertical line 1 (shapes touching the line)
* Reflect a shape in a horizontal or vertical line 2 (shapes not touching the line)
* Reflect a shape in a diagonal line 1 (shapes touching the line)
* Reflect a shape in a diagonal line 2 (shapes not touching the line)
 | * Retrieval in class starter
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- Using a calculator effectively.* Data analysts
* Statistician
 | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
 |
|  | **The Data Handling Cycle** | * Set up a statistical enquiry
* Design and criticise questionnaires
* Draw and interpret multiple bar charts
* Draw and interpret pie charts
* Draw and interpret line graphs
* Choose the most appropriate diagram for a given set of data
* Represent and interpret grouped quantitative data
* Find and interpret the range
* Compare distributions using charts
* Identify misleading graphs
 |
|  | **Measures of Location** | * Understand and use the mean, median and mode
* Choose the most appropriate average
* **H - Find the mean from an ungrouped frequency table**
* **H - Find the mean from a grouped frequency table**
* Identify outliers
* Compare distributions using averages and the range
 |
| **Catholicity across the curriculum:****Angles:** Catholicity promotes the idea of balance and harmony within communities, which can be related to the study of angles in mathematics. Angles represent the relationships between lines and shapes, fostering cooperation and understanding among individuals helps create a more equitable and just society.**Area:** Having a strong understanding of area allows pupils to allocate space fairly. Pupils can develop this further by considering how such concepts can be used to ensure everyone has access to the resources they need to thrive in a just society. The importance of the common good and equitable distribution of resources is prominent in this topic.**Line Symmetry and Reflection:** Fairness and equality is a core concept of Catholicity, and this can be strongly applied to line symmetry. Within this topic, shapes are mirrored to create balance. When applied to society, such values of balance help to ensure everyone is treated with respect and dignity, reflecting the values of justice and community. |