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| **Year 9 Curriculum Overview [2024-2025]****Mathematics** |
| **Autumn Term** |
|  **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** | **Straight line graphs**  | * R - Lines, parallel to the axes, y=x and y=-x
* Using table of values
* Compare gradients
* Compare intercepts
* Understand and use y=mx+c
* Write an equation in the form y=mx+c
* Find the equation of a line from a graph
* Interpret gradient and intercepts of real-life graphs
* Model real-life graphs involving inverse proportion (H)
* Explore perpendicular lines (H)
 | * Retrieval in class starter
* Prior knowledge whiteboard questions
* End of Topic Unit Test Intervention lessons using knowledge organiser material
 | * Key Vocabulary in Retrieval starters
* 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
 | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
* End of Term Tests
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|  | **Forming and solving equations** | * R - Solve one and two-step equations and inequalities
* R - Solve one and two-step equations and inequalities with brackets
* Inequalities with negative numbers
* Solve equations with unknowns on both sides
* Solve inequalities with unknowns on both sides
* Solving equations and inequalities in context
* Substituting into formulae and equations
* Rearranging formulae (one-step)
* Rearranging formulae (two-step)
* Rearrange complex formulae including brackets and squares (H)
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End of Term Tests |
|  | **Testing Conjectures** | * R - Factors, multiples and primes
* True or false
* Always, sometimes, never true
* Show that
* Conjectures about number
* Expand a pair of binomials
* Conjectures with algebra
* Explore the 100 grid
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End of Term Tests |
| **HT2** | **Three dimensional shapes** | * Know names of 2-D and 3-D shapes
* Recognise prisms
* Accurate nets of cuboids and other 3-D shapes
* sketch and recognise nets of cuboids and other 3-D shapes
* plans and elevations
* R - Find area of 2-D shapes
* Surface area of cubes and cuboids
* surface area of triangular prisms
* surface area of a cylinder
* volume of cubes and cuboids
* Volume of other 3-D shapes - prisms and cylinders
* Explore volumes of cone, pyramids and spheres (H)
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End of Term Tests |
|  | **Construction and congruency** | * R - draw and measure angles
* R - construct and interpret scale drawings
* Locus of distance from a point
* Locus of distance from a straight line/shape
* Locus of points equidistant from two points
* construct a perpendicular bisector
* Construct a perpendicular from a point
* Construct a perpendicular to a point
* Locus of distance from two lines
* Construct an angle bisector
* R - Construct triangles from given information
* Identify congruent figures
* Explore congruent triangles
* Identify congruent triangles
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End of Term Tests |
|  |  | * Integers, real and rational numbers
* Understand and use surds (H)
* R - Work with directed number
* Solve problems with integers
* Solve problems with decimals
* R - HCF and LCM
* R - Adding and subtracting fractions
* R - Multiplying and dividing fractions
* Solving problems with fractions
* R - Numbers in standard form
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End of Term Tests |
| **Catholicity across the curriculum:****Forming and Solving Equations:** Students are required to balance equations and come to a solution. Within this topic, pupils explore Math problems that are relevant to fairness and equality. **Three-dimensional shapes:** Throughout this topic students are encouraged to see the beauty and order in mathematical shapes. Students relate shapes they learn to the real world. This reflects the Catholic view that creation is orderly and purposeful.**Constructions and Congruency:** Show how math is used to address social issues and relating this to career pathways with clear focus on careers and diversity. This connects with Catholic social teachings on justice, stewardship, and the responsibility to care for others.**Algebraic notation a universal language:** Mirrors the concept of catholicity by fostering inclusivity and enabling people from diverse backgrounds to engage with mathematical ideas on a global scale. Just as catholicity unites individuals in faith across cultures and regions, algebraic notation connects learners worldwide in their pursuit of knowledge and problem-solving.**Place ordering integers and decimals** : Helping students develop a clear understanding of numerical relationships, a concept that can be applied universally, much like catholicity's call for unity across diverse communities. In real life, this skill allows individuals to make precise decisions in areas such as finance and measurement, reflecting how the inclusive nature of catholicity promotes careful attention to detail in both spiritual and practical matters. |
| **Spring term** |
| **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** | **Using Percentages** | * R - Use the equivalence of fractions, decimals and percentages
* R - Calculate percentage increase and decrease
* R - Express a change as a percentage
* Solve 'reverse' percentage problems
* Recognise and solve percentage problems (non-calc)
* R - Recognise and solve percentage problems (calc)
* Solve problems with repeated percentage change (H)
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End of Term Tests |
|  | **Maths and Money** | * Solve problems with bills and bank statements
* Calculate simple interest
* Calculate compound interest
* Solve problems with VAT
* Calculate wages and taxes
* Solve problems with exchange rates
* Solve unit pricing problems
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End of Term Tests |
| **HT4** | **Deductions** | * R - Angles in parallel lines
* Solving angles problems (using chains of reasoning)
* Angles problems with algebra
* Conjectures with angles
* Conjectures with shapes
* Link constructions and geometrical reasoning
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End of Term Tests |
|  | **Rotation and translation** | * Identify the order of rotational symmetry of a shape
* Compare and contrast rotational symmetry with line symmetry
* Rotate a shape about a point on a shape
* Rotate a shape about a point not on a shape
* Translate points and shapes by a given vector
* Compare rotation and reflection of shapes
* Find the result of a series of transformations
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End of Term Tests |
|  | **Pythagoras** | * R - Squares and square roots
* Identify the hypotenuse of a right-angled triangle
* Determine whether a triangle is right angled
* Calculate the hypotenuse of a right-angled triangle
* Calculate missing sides in right-angled triangles
* Use Pythagoras' theroem on coordinate axes
* Explore proofs of Pythagoras' theorem
* Use Pythagoras' theorem in 3-D shapes
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End of Term Tests |
| **Catholicity across the curriculum:****Using percentages:** Teaching pupils how using percentages can ensure equitable distribution of resources, reflecting values of fairness and justice. Calculating what percentage each member contributes promotes responsible stewardship and supports the common good.**Maths and money:** Using money skills to promote the common good and equitable distribution of resources. The values of justice and human dignity can be applied.**Enlargement and similarity:** Applying enlargement and similarity to the concept of Catholicity involves understanding how proportions and ratios can represent equality and fairness. All aspects being enlarged proportionately promotes balance and harmony, reflecting the values of justice and responsible stewardship.**Pythagoras Theorem:** Pupils are encouraged to build resilience and persevere through learning this challenging topic. From this, they gain the experience of humility of learning. |
| **Summer term** |
| **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** | **Enlargement and similarity** | * Recognise enlargement and similarity
* Enlarge a shape by a positive integer scale factor
* Enlarge a shape by a positive integer scale factor from a point
* Enlarge a shape by a positive **fractional** scale factor
* Enlarge a shape by a negative scale factor
* Work out missing sides and angles in a pair of given similar shapes
* Solve problems with similar triangles
* Explore ratios in right-angled triangles
 | * Retrieval in class starter
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End of Term Tests |
|  | **Solving ratio and proportion questions** | * R - Solve problems with direct proportion
* R - Direct proportion and conversion graphs
* Solve problems with inverse proportion
* Graphs of inverse relationships
* R - Solve ratio problems given the whole or part
* Solve 'best-buy' problems
* Solve problems ratio and algebra
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End of Term Tests |
|  | **Rates** | * Know and use mental addition and subtraction
* Solve speed, distance and time problems without a calculator
* Solve speed, distance and time problems with a calculator
* Use distance/time graphs
* Solve problems with density, mass and volume
* Solve flow problems and their graphs
* Rates of change and their units
* Convert compound units(H)
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End of Term Tests |
| **HT6** | **Probability** | * R - Single event probability
* Relative frequency - include convergence
* Expected outcomes
* Independent events
* Use tree diagrams (H)
* Use tree diagrams to solve 'without replacement' problems(H)
* Use tree diagrams to work out probabilities
 | * Retrieval in class starter
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End of Term Tests |
|  | **Algebraic representation** | * Draw and interpret quadratic graphs
* Interpret graphs, including reciprocal and piecewise
* Investigate graphs of simultaneous equations
* Represent inequalities
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End of Term Tests |
| **Catholicity across the curriculum:****Solving ratio and proportion questions:** Within this topic, fairness and equitable distribution of resources is heavily emphasised. For instance, when dividing resources among community members, using ratio ensures that everyone receives their fair share based on need, reflecting the values of social justice and the common good.**Rates:** Measurements of speed/distance/time can reflect balance in pupils daily lives. Pupils are required to use logical thinking and apply maths to concepts they encounter in the real world. **Algebraic representation:** Using variables and equations to model situations that promote fairness and equitable distribution of resources. Responsible stewardship is heavily emphasised during this topic. Real life examples are used to model simultaneous equations and how the distribution of resources and be explored. |