

# Our Lady Queen of Peace

Catholic High School

## Curriculum Overview

### YEAR 8 Mathematics

#### Careers

| Local Market Information                                                                                                                                                | Skills                                                                                                                                                                                                                               | Jobs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Logistics and distribution, manufacturing, engineering, construction, retail, health and social care, business and administration, digital technology, public services. | Problem solving, logical reasoning, critical thinking, accuracy, resilience, communication, teamwork, numeracy, financial awareness, data interpretation, decision making, working systematically, estimation, measuring accurately. | Warehouse Operative, Logistics Coordinator, HGV Driver, Delivery Driver, Warehouse Supervisor, Production Operative, Machine Operator, Maintenance Technician, Quality Inspector, Manufacturing Engineer, Bricklayer, Joiner, Electrician, Plumber, Site Manager, Quantity Surveyor, Healthcare Assistant, Nurse, Pharmacy Technician, Care Worker, Paramedic, Retail Assistant, Store Manager, Business Administrator, Customer Service Adviser, Finance Assistant, Mechanical Engineer, Electrical Engineer, Civil Engineer, CAD Technician, Engineering, Architect, Surveyor, , Computer Programmer, Data Analyst, Sports Analyst, Marketing Officer, Graphic Designer, Product Designer, Accountant, Financial Adviser, Chef, Baker, Food Scientist, Hairdresser, Pharmacist, Economist,. |

#### Knowledge & Understanding

#### Subject Specific Literacy Development

#### Cultural Capital / Enrichment Opportunities

|             | Topics (Bigger Picture)                           | Knowledge (Key Concepts)                                                                                                                                                                                                                   | Recall & Retrieval Practice Focus                                                                                                               | Key Vocabulary                              |                                                                                       |
|-------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------|
| Half Term 1 | <b>Multiples, Factors and Prime Factorisation</b> | Identify multiples, factors, prime numbers and square numbers.<br>Calculate the LCM and HCF.<br>Prime Factorisation.                                                                                                                       | Key skills from Y7 HT6<br>Class specific based on Y7 content. Areas of improvement identified from Year 7 alongside key content to be revisited | Prime Factorisation<br>Multiples<br>Factors | Cybersecurity and prime numbers: how prime numbers underpin modern encryptions (RSA). |
|             | <b>Approximation and rounding</b>                 | Round to the nearest integer, 10, 100 and 1000.<br>Round to decimal places and significant figures.<br>Use a calculator to answer complex calculations.<br>Use estimation to answer calculations.<br>Calculate bounds and error intervals. |                                                                                                                                                 | Estimation<br>Significant Figures           |                                                                                       |
| Half Term 2 | <b>Percentages</b>                                | Percentages of Shapes<br>Convert between FDP<br>Percentages of Amounts<br>One quantity as a percentage of another                                                                                                                          | Key skills from HT1 alongside key content from Year 7 to be revisited                                                                           | Interest                                    | Consumer maths: compare supermarket prices using ratios (£/100g).                     |

|             | Knowledge & Understanding                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                       | Subject Specific Literacy Development           | Cultural Capital / Enrichment Opportunities                                                                      |
|-------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|             | Topics (Bigger Picture)                   | Knowledge (Key Concepts)                                                                                                                                                                                                                                                                                                                                                                                                                                           | Recall & Retrieval Practice Focus                                                                     | Key Vocabulary                                  |                                                                                                                  |
|             |                                           | Percentage Increase and Decrease<br>Percentage Change as a fraction or decimal<br>Simple and Compound Interest<br>Expressing one quantity as a fraction of another                                                                                                                                                                                                                                                                                                 |                                                                                                       |                                                 |                                                                                                                  |
|             | Ratio                                     | Simplifying Ratio<br>Calculating missing parts in a ratio when one part is given<br>Converting currencies<br>Combining two ratios                                                                                                                                                                                                                                                                                                                                  |                                                                                                       | Convert                                         |                                                                                                                  |
|             | Recipes<br>Direct/Inverse Proportion      | Scale up and down recipes using scale factors<br>Solve direct and inverse proportion problems using the unitary method<br>Solve work rate problems                                                                                                                                                                                                                                                                                                                 |                                                                                                       | Proportion<br><br>Unitary                       |                                                                                                                  |
| Half Term 3 | Representing Data                         | Be able to plot points on scatter graphs, describe correlation and interpolate using a line of best fit.<br>Be able to draw and interpret bar charts.<br>Be able to draw and interpret stem and leaf diagrams, including calculating averages.<br>Be able to draw and interpret pie charts.<br>Be able to draw and interpret cumulative frequency curves, including calculating the IQR.<br>Be able to draw and interpret boxplots, including calculating the IQR. | Class specific based on Key skills from HT1 & 2<br>Areas identified from Mid-Year Assessment feedback | Correlation<br><br>Quartiles<br><br>Interpolate | Algebra in ancient cultures: solving equations geometrically like the Babylonians.                               |
|             | Algebraic Equations & Rearranging Formula | Use function machines to calculate missing inputs and outputs.<br>Introduce the term 'Equation'<br>Solve linear equations; one step, two step, inclusion of brackets and when the variable appears on both sides.<br>Be able to form and solve linear equations.<br>Be able to change the subject of basic mathematical formula.                                                                                                                                   |                                                                                                       | Equation<br><br>Solve<br><br>Rearrange          |                                                                                                                  |
| Half Term 4 | Algebraic Inequalities                    | Use inequality notation.<br>Represent an inequality on a number line.<br>Solve linear inequalities, including the use of a negative variable.<br>Solve linear inequalities with both one and two inequality signs.                                                                                                                                                                                                                                                 | Class specific based on Key skills from HT1 to 3                                                      | Inequality                                      | Sequences in music: explore how arithmetic and geometric sequences appear in music scales and rhythmic patterns. |

|                    | Knowledge & Understanding            |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                           | Subject Specific Literacy Development | Cultural Capital / Enrichment Opportunities                                                                                 |
|--------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|                    | Topics (Bigger Picture)              | Knowledge (Key Concepts)                                                                                                                                                                                                                                                                                                                                                                                                                               | Recall & Retrieval Practice Focus                                                                         | Key Vocabulary                        |                                                                                                                             |
|                    |                                      | Form and solve linear inequalities.                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                           |                                       |                                                                                                                             |
|                    | <b>Sequences</b>                     | Identify special number sequences such as square numbers, triangular numbers, Fibonacci sequence. Describe the position-to-term rule for an arithmetic sequence. Generate a sequence using the position-to-term rule. Evaluate if a number is in a sequence using the position-to-term rule. Introduce quadratic sequences.                                                                                                                            |                                                                                                           | Quadratic<br>Term                     |                                                                                                                             |
| <b>Half Term 5</b> | <b>Plotting and Sketching Graphs</b> | Plot co-ordinates in all four quadrants. Plot and identify horizontal and vertical lines. Recognise $y=mx+c$ for straight lines and identify the gradient and the y-intercept including changing from $ax + by = c$ . Draw a straight line graph in the form $y=mx+c$ by using a table of values. Work out the equation of a straight line by calculating the gradient and y-intercept. Plotting quadratic graphs and use graphs to estimate solutions | Class specific based on Key skills from HT1 to 4                                                          | Gradient<br>Y-Intercept               | Using a map and scaled diagrams to find the shortest distance between two points (DoE link).                                |
|                    | <b>Similarity</b>                    | Define and identify congruent and similar shapes. Calculate missing sides in similar shapes by using a scale factor. Investigate the link between area and volume scale factors and use this on basic examples.                                                                                                                                                                                                                                        |                                                                                                           | Congruent<br>Similar                  |                                                                                                                             |
|                    | <b>Pythagoras</b>                    | Recall Pythagoras' theorem. Apply Pythagoras' theorem to calculate the length of any missing side. Apply Pythagoras' theorem to worded problems.                                                                                                                                                                                                                                                                                                       |                                                                                                           | Hypotenuse Theorem                    |                                                                                                                             |
| <b>Half Term 6</b> | <b>Introduction to Circles</b>       | Construct circles with pairs of compasses<br>Identify and label parts of circles<br>Understand that Pi is the ratio of circumference to diameter<br>Calculate area given either radius or diameter<br>Calculate circumference given either radius or diameter                                                                                                                                                                                          | Class specific based on Key skills from HT1 to 5 including areas identified from Summer Assessment series | Radius<br>Diameter<br>Circumference   | Explore Islamic tiling patterns and recreate traditional geometric patterns using compass constructions and transformations |
|                    | <b>Transformations</b>               | Identify lines of symmetry and the order of rotational symmetry for 2D shapes.                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                           | Scale Factor                          |                                                                                                                             |

|  | Knowledge & Understanding |                                                                                                                                                                                                                                                                           |                                   | Subject Specific Literacy Development                          | Cultural Capital / Enrichment Opportunities |
|--|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------|---------------------------------------------|
|  | Topics (Bigger Picture)   | Knowledge (Key Concepts)                                                                                                                                                                                                                                                  | Recall & Retrieval Practice Focus | Key Vocabulary                                                 |                                             |
|  |                           | Describe and transform reflections.<br>Describe and transform rotations.<br>Describe and transform translations, including the use of vectors.<br>Describe and transform enlargements, using a positive integer or fractional scale factor, including from a given point. |                                   | Vector<br>Translation<br>Rotation<br>Reflection<br>Enlargement |                                             |

## Key Assessments

| When | What will be assessed?                                                                                     | Why is this being assessed?                                                                                                                                                                                            | How will results be stored & students receive feedback?                                                                      |
|------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| HT1  | Mathematical Reasoning<br>Multiples, Factors and Primes<br>Approximation                                   | To assess the students understanding of, and their retention of the topics taught. This information will be used to inform the topics that make up the Remember More part of the Recall and Retrieval starter activity | Scores will be stored on SIMS and student feedback will be through class teacher reviewing the assessment via the visualiser |
| HT2  | Mid Year Assessment (Summative Assessment)                                                                 | Check how well students can remember and apply what they know to a wide range of questions – can they identify the skills needed to answer questions from topics taught in yr 7 and the first part of yr 8             | Scores will be stored on SIMS and student feedback will be through class teacher reviewing the assessment via the visualiser |
| HT3  | Scatter Graphs<br>Pie Charts<br>Stem and Leaf Diagrams<br>Box plots and Cumulative frequency<br>Proportion | To assess the students understanding of, and their retention of the topics taught. This information will be used to inform the topics that make up the Remember More part of the Recall and Retrieval starter activity | Scores will be stored on SIMS and student feedback will be through class teacher reviewing the assessment via the visualiser |
| HT4  | Equations<br>Inequalities<br>Changing the subject                                                          | To assess the students understanding of, and their retention of the topics taught. This information will be used to inform the topics that make up the Remember More part of the Recall and Retrieval starter activity | Scores will be stored on SIMS and student feedback will be through class teacher reviewing the assessment via the visualiser |
| HT5  | Summer Assessment (Summative Assessment)                                                                   | Check how well students can remember and apply what they know to a wide range of questions – can they identify the skills needed to answer questions from topics taught in yr 7 and the yr 8                           | Scores will be stored on SIMS and student feedback will be through class teacher reviewing the assessment via the visualiser |
| HT5  | Pythagoras<br>Circles                                                                                      | To assess the students understanding of, and their retention of the topics taught. This information will be used to inform the topics that make up the Remember More part of the Recall and Retrieval starter activity | Scores will be stored on SIMS and student feedback will be through class teacher reviewing the assessment via the visualiser |