St Mary's CE High School Curriculum Map 2023-24
Mathematics Year 9

Mathematics is an interconnected subject in which students need to be able to move fluently between representations of mathematical ideas. The programme of study is organised into apparently distinct domains, but students should build on key stage 2 and connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge in science, geography, computing and other subjects.

The curriculum is taught through the six mathematical strands of: Number and Ratio, Algebra, Geometry and Measures, Statistics and Probability

	Autumn 1a	Autumn 1b	Spring 2a	Spring 2b	Summer 3a	Summer 3b
CONTENT *Declarative / core / powerful Knowledge – 'Know What'*	**Algebra: Expanding and Factorising**	**Number: Indices and Fractional Powers**	**Similarity and Pythagoras**	**Sequences**	**Probability**	**Statistics**
Intent	Algebra is the language of maths. As the complexity of problems increase, as does the knowledge of algebra. This half term is vital for manipulating algebra in more advanced settings	Students will encounter negative indices to assist when it features in standard form. This will also prepare students for when they encounter the final rules of indices next year.	Students will extend their knowledge of proportion in the context of shape. This will prepare students for using proportionality in area and volume situation	Sequences and drawing linear graphs appear together to allow students to compare and contrast the similarities and differences between rules of sequences and equations of lines	Students will build on their knowledge of probability by investigating multi-event probability. Showing the models for mutually exclusive and non-mutually exclusive events together allows students to compare and contrast these ideas.	Students build on their basic diagrams from year 7 and their proportional reasoning from year 8 to learn about new ways to represent data. This will prepare them for either their GCSE foundation tier paper or for working with more advanced diagrams in higher tier GCSE.

Skills *Procedural Knowledge – 'Know How'*	Students will be able to: Expand and factorise linear equations and quadratics Expand triple brackets and solve quadratic equations by factorising	Students will be able to: Understand why a negative index is the reciprocal of the number Use the laws of negative indices Use the laws of fractional powers Simplify expressions of a complex nature Simplify indices with different bases. Convert into standard form and vice versa Use the four operations on numbers in standard form	Students will be able to: Find missing lengths on similar shapes Enlarge shapes on a grid Use Pythagoras theorem to find missing sides of a right angled triangle Find the areas of sectors Find the arc lengths of a sector	Students will be able to: Solve problems with pictorial sequences Solve problems of numerical linear sequences Plot linear graphs Use equations of linear graphs in simple cases Solve simultaneous equations in simple cases.	Students will be able to: Use counting strategies and systematic listing Use two way tables Use venn diagrams Use Set notation for venn diagrams Find the probability of multiple events	Students will be able to: Draw and interpret pie charts Draw and interpret time-series graphs and frequency polygons Draw and interpret scatter graphs Know the limits and pitfalls of interpolating or extrapolating Draw and interpret stem and leaf diagrams

Key Questions	Can any quadratic be factorised? What's the difference between factorised and fully factorised?	How do you find the reciprocal of a decimal? What is the same and different with add expressions involving powers and multiplying expressions with powers?	How can you show if two shapes are similar or not? Does Pythagoras' theorem work for any triangle?	Are numbers in a sequence in direct proportion to each other? Can you use a pictorial method to solve simultaneous equations?	How can a counting strategy help you find the probability of an event? Which diagram is most helpful to solve a multi-event probability problem?	Is this statement true: When comparing two pie charts the larger sector always has the most frequency compared to a second pie chart?
Assessment	Students will be assessed on a Diagnostic quiz at the end of each unit and a retest to improve any gaps in learning. A half termly assessment will be completed in class covering content covered this half term, and previous topics covered at St. Mary's	Students will be assessed on a Diagnostic quiz at the end of each unit and a retest to improve any gaps in learning. A half termly assessment will be completed in class covering content covered this half term, and previous topics covered at St. Mary's	Students will be assessed on a Diagnostic quiz at the end of each unit and a retest to improve any gaps in learning. A half termly assessment will be completed in class covering content covered this half term, and previous topics covered at St. Mary's	Students will be assessed on a Diagnostic quiz at the end of each unit and a retest to improve any gaps in learning. A half termly assessment will be completed in class covering content covered this half term, and previous topics covered at St. Mary's	Students will be assessed on a Diagnostic quiz at the end of each unit and a retest to improve any gaps in learning. A half termly assessment will be completed in class covering content covered this half term, and previous topics covered at St. Mary's	Students will be assessed on a Diagnostic quiz at the end of each unit and a retest to improve any gaps in learning. A half termly assessment will be completed in class covering content covered this half term, and previous topics covered at St. Mary's

Links to careers/wider world	Many mathematical models follow a quadratic relationship. Working with gravity and constant acceleration equations		Enlargements of pictures Astronomy and distances to stars	Estimating rabbit populations Using sequences to model financial transactions	Decision making with probabilities Playing games of chance	Interpreting and making sense of "real world" (and sometimes misleading) statistics seen in media.