St Mary's CE High School Curriculum Map 2022-23

Subject: Mathematics Foundation tier
Year: 10

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 3 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 mathematical strands of: Number and Ratio, Algebra, Geometry and Measures, Statistics and Probability

	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
CONTENT *Declarative / core / powerful Knowledge – 'Know What'*	**Algebra: Simultaneous Equations**	**Percentage Growth and Decay**	**Trigonometry and Bearings**	**3D Shape**	**Statistics**	**Geometry**
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.	Percentage growth and decay attributes itself to other areas of mathematics. Having a good understanding of this allows chances of incorporating into practice later in the year.	Trigonometry and bearings appear together as, for more able students, it allows more complex questions to be practiced which mix these two skills together.	Students use the prior understanding of area of shape to work with volumes and surface areas.	Students extent their knowledge of averages to include situations when data is presented in a table.	Students recap some of the more challenging areas of geometry such as trigonometry first taught in spring 2a this year. Transformations and graphs are also reinforced and extended on from the KS3 curriculum
Skills *Procedural Knowledge – 'Know How'*	Students will be able to: Solve complex linear equations Rearrange formula Simplify the sum of algebraic fractions in simple cases Solve linear simultaneous equations	Students will be able to: Revisit converting between fraction, decimals and percentages Recap manipulating fractions Recap finding percentages of amounts	Students will be able to: Use trigonometry in 2D right angled triangles Use trigonometry without the aid of a calculator Solve problems involving bearings	Students will be able to: Draw the net of a prism Use the language of 3d shapes Find the surface area of prisms Find the surface area of simple non-prisms	Students will be able to: Revisit finding averages from lists Find the average from a frequency table Find the average from a grouped frequency table	Students will be able to: Apply the four transformations to shapes Find missing angles or missing lengths using trigonometry

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		Find the value after a percentage in/decrease Find the original value given a in/decreased value	Construct triangles using a pair of compasses Solve loci problems	Find the volume of prisms and cylinders Convert between units of area and volume.	Extend trigonometry use from earlier in the year Draw and interpret real life graphs	Interpret and answer questions by reading from real life graphs Use speed distance time graphs to answer questions
Key Questions	How many equations do you need to solve for 2 unknown variables? What is the difference in solving an equation and rearranging a formula?	Can you use a diagram to show how to add fractions together? Can you find different ways to find percentage of amounts?	How is trigonometry related to similar shapes?	How does drawing the net of a shape aid finding the surface area of a shape? Can you show why the volume of a prism is the cross section area multiplied by the length with the aid of a diagram?	Why can we not find the exact mean average from a grouped frequency table?	What does a flat line mean on a distance time graph? A speed time graph? What does a “upward” line mean on a distance time graph?
Assessment	Students will be assessed through a retrieval quiz every 2 weeks in class. A half termly assessment will be completed in class that covers all the content taught within the half term.	Students will be assessed through a retrieval quiz every 2 weeks in class. A half termly assessment will be completed in class that covers all the content taught within the half term.	Students will be assessed through a retrieval quiz every 2 weeks in class. A half termly assessment will be completed in class that covers all the content taught within the half term.	Students will be assessed through a retrieval quiz every 2 weeks in class. A half termly assessment will be completed in class that covers all the content taught within the half term.	Students will be assessed through a retrieval quiz every 2 weeks in class. A half termly assessment will be completed in class that covers all the content taught within the half term.	Students will be assessed through a retrieval quiz every 2 weeks in class. A half termly assessment will be completed in class that covers all the content taught within the half term.
Links to careers/wider world		Interest rates Depreciation of value Find an original price after a discount/price increase	Astronomy Orienteering Navigation	Planning involving capacity e.g. car fuel tanks	Data analytics management	Data analytics management