

Year 9 Foundation curriculum map

Sequencing of topics	What knowledge will students develop? (Including key terminology)	What skills will students develop? (Including literacy & numeracy)	Assessment opportunities	Homework opportunities	Personal development (Ursuline Values, Catholic Social Teaching, Cultural Capital, Cross-curricular, Careers)	Curriculum Links
Autumn Term						
1: Number: Basic number	<ul style="list-style-type: none"> Place value and ordering numbers Order of operations and BIDMAS 	<ul style="list-style-type: none"> use a number line to represent negative numbers use inequalities with negative numbers compare and order positive and negative numbers. use the four rules of arithmetic with integers and decimals. work out the answers to problems with more than one mathematical operation. 	<p>End of topic assessment</p> <p>End of term assessment</p>	<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> Videos Practice questions Past exam questions Differentiated activities. Opportunities for flipped learning <p>Research opportunities:</p> <ol style="list-style-type: none"> Real-life use of Number lines: -Recording temperature, distance above sea level, scales, measuring jugs. 	<p>Listening and Attentive: By actively listening and paying attention to the positional value of digits, students can develop a deeper understanding of place value</p> <p>Solidarity: The principle of solidarity emphasizes the interconnectedness of all people.</p> <p>Exposure to number systems and understanding place value in different cultures can broaden students' cultural capital by appreciating diverse ways of representing and understanding numerical concepts.</p> <p>This topic can be linked to cross-curricular</p>	<p>Decimal numbers and fractions.</p> <p>approximations and mental calculations.</p>

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				<p>2. Four rules of arithmetic: Calculate shopping bill, manage allowance.</p>	<p>opportunities in subjects like Science (for understanding scientific notations and measurements).</p> <p>careers such as accounting, banking, financial analysis, data analysis, engineering, architecture, and computer programming.</p>	
<p>2: Geometry and measures: Measures and scale drawings</p>	<ul style="list-style-type: none"> • Systems of measurement • Conversion factors • Scale drawings • Nets <p>Using an isometric grid</p>	<ul style="list-style-type: none"> • convert from one metric unit to another • convert from one imperial unit to another. • use approximate conversion factors to change between imperial units and metric units. • read and draw scale drawings • use a scale drawing to make estimates. • draw nets of some 3D shapes • identify a 3D shape from its net. • read from and draw on isometric grids • interpret diagrams to draw plans and elevations. 		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> 1. Videos 2. Practice questions 3. Past exam questions 4. Differentiated activities. 5. Opportunities for flipped learning <p>Research opportunities:</p> <ol style="list-style-type: none"> 1. Construction/ architecture 	<p>Faith-filled and Hopeful: Geometry involves exploring and understanding the patterns and structures present in the physical world. Approaching geometry with faith and hope allows students to appreciate the order and beauty found in geometric shapes and constructions.</p> <p>Demonstrating courage and resilience helps students face difficulties, persevere through calculations, and accurately interpret and create scale drawings.</p> <p>Dignity of the Human Person</p>	<p>Trigonometry</p> <p>Coordinate Geometry</p>

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				<p>2. Link to ratios Reading maps. Distances between landmarks/cities.</p>	<p>Care for God's Creation</p> <p>Design & Technology: Measures and scale drawings align with the skills needed for designing and creating precise scaled models and prototypes.</p>	
<p>3: Statistics: Charts, tables and averages</p>	<ul style="list-style-type: none"> • Frequency tables • Statistical diagrams • Line graphs • Statistical averages 	<p>use tally charts and frequency tables to collect and represent data</p> <ul style="list-style-type: none"> • use grouped frequency tables to collect and represent data. • draw pictograms to represent statistical data • draw bar charts and vertical line charts to represent statistical data. • draw a line graph to show trends in data. • work out the mode, median, mean and range of small sets of data • decide which is the best average to use to represent a data set. 		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> 1. Videos 2. Practice questions 3. Past exam questions 4. Differentiated activities. 5. Opportunities for flipped learning <p>Research opportunities: Where are these charts used in everyday life? What kind of data do we</p>	<p>Discovering these insights can bring joy and a sense of accomplishment in understanding the significance of the data and its implications.</p> <p>Common Good Preferential Option for the Poor and Vulnerable</p> <p>understanding the cultural significance of certain averages in different communities.</p> <p>Business Studies: Understanding statistics, charts, tables, and averages is valuable in business decision-making, market analysis, and financial planning.</p>	<p>Probability theory Data collection and sampling methods Statistical inference and hypothesis testing</p>

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				often see represented by them	These topics have applications in various careers, including market research, data analysis, financial analysis, actuarial science, economics, social sciences, and public health.	
4: Geometry and measures: Angles	<ul style="list-style-type: none"> 4.1 Angles facts 4.2 Triangles 4.3 Angles in a polygon 4.4 Regular polygons 4.5 Angles in parallel lines 4.6 Special quadrilaterals 4.7 Bearings 	<ul style="list-style-type: none"> calculate angles on a straight line calculate angles around a point use vertically opposite angles. recognise and calculate the angles in different sorts of triangle. calculate the sum of the interior angles in a polygon. calculate the exterior angles and the interior angles of a regular polygon. calculate angles in parallel lines. use angle properties in quadrilaterals. use a bearing to specify a direction. 		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> Videos Practice questions Past exam questions Differentiated activities. Opportunities for flipped learning <p>Research opportunities:</p>	<p>Courageous and Resilient: Geometry requires students to approach problem-solving with courage and resilience.</p> <p>Solidarity Option for the Poor and Vulnerable.</p> <p>Cultural capital in understanding angles can involve exploring culturally significant practices that utilize specific angle measurements, such as the use of angles in traditional art forms, architectural traditions, or culturally specific tools that utilize angle measurements.</p> <p>Physics: Understanding angles is relevant in</p>	<p>Trigonometry Geometric transformations Coordinate geometry Geometric proofs 2D and 3D shapes</p>

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				<ol style="list-style-type: none"> 1. Shapes of tiles 2. Kicking a ball at a 70 degree angle – sports. 3. Clock hands 4. Engineers/pilots 5. The angle at which solar panels are installed to maximise absorption of sunlight etc. 	<p>studying concepts such as projectile motion, reflection, refraction, and optics.</p> <p>Construction Carpentry Robotics Navigation Astronomy</p>	
Spring Term						
5: Number: Number properties	<ul style="list-style-type: none"> • 5.1 Multiples of whole numbers • 5.2 Factors of whole numbers • Prime numbers • 5.4 Prime factors, LCM and HCF • 5.5 Square numbers • 5.6 Square roots • 5.7 Basic calculations on a calculator 	<ul style="list-style-type: none"> • find multiples of whole numbers • recognise multiples of numbers. • identify the factors of a number. • identify prime numbers. • identify prime factors • identify the lowest common multiple (LCM) of two numbers • identify the highest common factor (HCF) of two numbers. • identify square numbers 	<p>End of topic assessment</p> <p>End of term assessment</p>	<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> 1. Videos 2. Practice questions 3. Past exam questions 4. Differentiated activities. 	<p>Grateful and Generous: Understanding number properties requires recognizing and appreciating the patterns and relationships within numbers.</p> <p>Option for the Poor and Vulnerable Care for God's Creation</p> <p>exposure to diverse numerical systems used by different cultures,</p>	<p>Algebraic Concepts Number Theory Equations and Inequalities</p>

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		<ul style="list-style-type: none"> • use a calculator to find the square of a number. • recognise the square roots of square numbers up to 225 • use a calculator to find the square roots of any number. • use some of the important keys when working on a calculator. 		<p>5. Opportunities for flipped learning</p> <p>Research opportunities:</p> <ol style="list-style-type: none"> 1. Exchanging money 2. Best buys 3. Using square numbers in Pythagoras to, for example, find a length of a shadow cast by a pole. 	<p>historical developments in numeration systems, and exploring culturally significant numbers or mathematical traditions.</p> <p>History: Understanding number properties can connect to the historical development of numeration systems and mathematical discoveries throughout different civilizations.</p> <p>Accounting Finance Actuarial science Data analysis Research and statistics</p>	
6: Number: Approximations	<ul style="list-style-type: none"> • 6.1 Rounding whole numbers • 6.2 Rounding decimals • 6.3 Approximating calculations 	<ul style="list-style-type: none"> • round a whole number. • round decimal numbers to a given accuracy. • identify significant figures • round numbers to a given number of significant figures 		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> 1. Videos 2. Practice questions 3. Past exam questions 	<p>Faith-filled and Hopeful It encourages students to trust in their mathematical skills and have confidence in their ability to make reasonable estimations.</p> <p>Dignity of the Human Person Solidarity</p> <p>Cultural capital in approximations can involve</p>	<p>Estimation and rounding Calculus (Approximation of functions and derivatives) Mathematical modeling Numerical methods in solving equations and systems</p>

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		<ul style="list-style-type: none"> • use approximation to estimate answers and check calculations • round a calculation at the end of a problem, to give what is considered to be a sensible answer. 		<p>4. Differentiated activities.</p> <p>5. Opportunities for flipped learning</p> <p>Research opportunities:</p> <ul style="list-style-type: none"> -Using rounding in grocery stores, restaurants, planning a party. -Mental Maths -Memorising numerical facts. <p>E.g in 2006 the census department determined that the population of New York City was 8,214,426. That number is hard to remember and if we say the population of New York City is 8 million it is a good estimate because it doesn't make any real difference what the exact number is.</p>	<p>exploring different historical methods of approximation used by ancient civilizations or understanding the cultural significance of estimation in traditional practices, such as trade, measurement systems, or architectural constructions.</p> <p>Geography: Approximations in numbers can be applied in geographical calculations, such as estimating distances, areas, or populations.</p> <p>Engineering Finance and investment Data analysis Statistics Business management</p>	
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<p>7: Number: Decimals and fractions</p>	<ul style="list-style-type: none"> • 7.1 Calculating with decimals • 7.2 Fractions and reciprocals • 7.3 Writing one quantity as a fraction of another • 7.4 Adding and subtracting fractions • 7.5 Multiplying and dividing fractions • 7.6 Fractions on a calculator 	<ul style="list-style-type: none"> • recognise different types of fraction, reciprocal, terminating decimal and recurring decimal • convert terminating decimals to fractions • convert fractions to decimals • find reciprocals of numbers or fractions. • work out a fraction of a quantity • find one quantity as a fraction of another. • add and subtract fractions with different denominators. • multiply proper fractions • multiply mixed numbers • divide by fractions. • use a calculator to add and subtract fractions • use a calculator to multiply and divide fractions. 		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> 1.Videos 2.Practice questions 3.Past exam questions 4.Differentiated activities. 5.Opportunities for flipped learning <p>Research opportunities:</p> <ol style="list-style-type: none"> 1. Fractions of an amount in stores: Half price/Buy one get one free. 2. Splitting a bill at a restaurant. 3. Calculating the discounted price of an object on sale. 4. Following a recipe. 	<p>United in Harmony: Decimals and fractions require students to understand the interconnectedness of different numerical representations.</p> <p>Common Good Solidarity</p> <p>Cultural capital in decimals and fractions can involve exploring diverse cultural approaches to numerical systems and different ways of representing fractional values across various cultures.</p> <p>Science: Understanding decimals and fractions is relevant in scientific measurements, such as recording and interpreting data involving quantities, ratios, or percentages.</p> <p>Accounting Engineering Science and research Finance and banking Architecture and design</p>	<p>Percentages and Ratios Proportional reasoning</p>
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				5. Fractions are frequently used to analyse the performance of a particular player and team.		
8: Algebra: Linear graphs	<ul style="list-style-type: none"> 8.1 Graphs and equations 8.2 Drawing linear graphs by finding points 8.3 Gradient of a line 8.4 $y = mx + c$ 8.5 Finding the equation of a line from its graph 8.6 The equation of a parallel line 8.7 Real-life uses of graphs 8.8 Solving simultaneous equations using graphs 	<ul style="list-style-type: none"> use flow diagrams to draw graphs work out the equations of horizontal and vertical lines. draw linear graphs without using flow diagrams. work out the gradient of a straight line draw a line with a certain gradient. draw graphs using the gradient-intercept method draw graphs using the cover-up method. work out the equation of a line, using its gradient and y-intercept work out the equation of a line given two points on the line. work out the equation of a linear graph that is parallel to another line and passes through a specific point. 		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> Videos Practice questions Past exam questions Differentiated activities. Opportunities for flipped learning <p>Research opportunities: -Straight line graphs are used in Chemistry and Biology.</p>	<p>By leading for justice, truth, and integrity, students approach linear graphs with honesty and fairness, making unbiased conclusions based on the evidence presented by the graph.</p> <p>Solidarity Care for God's Creation</p> <p>Cultural capital in linear graphs can involve exploring culturally significant applications of linear relationships in various fields, such as economics, engineering, or urban planning.</p> <p>Science: Linear graphs can be applied in analysing scientific data, interpreting</p>	Algebraic Concepts Functions and Relations

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		<ul style="list-style-type: none"> • convert from one unit to another unit by using a conversion graph • use straight-line graphs to work out formulae. • solve simultaneous linear equations using graphs. 		<p>-Straight line graphs are used to estimate whether our body weight is appropriate according to our height.</p>	<p>experimental results, or modelling relationships between variables.</p> <p>Data analysis and statistics Actuarial science Engineering and architecture Economics and finance Environmental science</p>	
Summer Term						
9: Algebra: Expressions and formulae	<ul style="list-style-type: none"> • 9.1 Basic algebra • 9.2 Substitution • 9.3 Expanding brackets • 9.4 Factorisation 9.5 Quadratic expansion • 9.6 Quadratic factorisation • 9.7 Changing the subject of a formula 	<ul style="list-style-type: none"> • write an algebraic expression • recognise expressions, equations, formulae and identities. • substitute into, simplify and use algebraic expressions. • expand brackets such as $2(x - 3)$ • expand and simplify brackets. • factorise an algebraic expression. • expand two linear brackets to obtain a quadratic expression. • factorise a quadratic expression of the form $x^2 + ax + b$ into two linear brackets. • change the subject of a formula. 	<p>End of topic assessment</p> <p>End of term assessment</p>	<p>MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> 1. Videos 2. Practice questions 3. Past exam questions 4. Differentiated activities. 5. Opportunities for flipped learning <p>Research opportunities:</p> <ol style="list-style-type: none"> 1. A variable is a number that does not have a fixed value. The picture and the list 	<p>Discerning and Joyful: Learning expressions and formulae requires discernment in understanding the meaning and purpose behind mathematical symbols and notation.</p> <p>Option for the Poor and Vulnerable Solidarity</p> <p>investigating how mathematical concepts have been applied in diverse cultural contexts.</p> <p>physics: Expressions and formulae are essential for representing physical laws and mathematical models</p>	<p>Algebraic Concepts Equations and Inequalities</p>

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				<p>below show some real-life examples, where the value of a variable changes with the change in place and time.</p> <ol style="list-style-type: none"> 2. The temperature in different places also change. 3. The height of a growing child changes with time. 4. The speed of a car changes with time. 5. The age of people keeps on increasing year by year. 	<p>in physics, enabling students to understand the quantitative relationships between physical quantities.</p> <p>Engineering Data analysis and statistics Finance and accounting Scientific research Computer programming and software development</p>	
10: Ratio and proportion and rates of change: Ratio, speed and proportion	<ul style="list-style-type: none"> • 10.1 Ratio • 10.2 Speed, distance and time 	<ul style="list-style-type: none"> • simplify a ratio • express a ratio as a fraction • divide amounts into given ratios 		Mathswatch/ CorbettMaths/Mathsbox/ MathsGenie/MyMaths/Q uizizz	Being united in harmony helps students see how different quantities relate to each other and work together to form a ratio.	Proportional reasoning Algebraic Concepts

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	<ul style="list-style-type: none"> 10.3 Direct proportion problems 10.4 Best buys 	<ul style="list-style-type: none"> complete calculations from a given ratio and partial information. recognise the relationship between speed, distance and time calculate average speed from distance and time calculate distance travelled from the speed and the time taken calculate the time taken on a journey from the speed and the distance. recognise and solve problems that involve direct proportion. find the cost per unit mass find the mass per unit cost use the above to find which product is better value. 		<p>These include:</p> <ol style="list-style-type: none"> Videos Practice questions Past exam questions Differentiated activities. Opportunities for flipped learning <p>Research opportunities:</p> <ol style="list-style-type: none"> Use of ratios in recipes. Speed, distance, time –Planning a journey. Best buys – mass per unit cost. Shopping/comparing products online. 	<p>Dignity of the Human Person Care for God's Creation</p> <p>Understanding how different cultures approached these concepts can provide insights into their technological and scientific achievements.</p> <p>Geography: Ratio and speed, distance, and time are relevant in analysing map scales, understanding population density, or studying transportation networks.</p> <p>Engineering Sports and athletics</p>	<p>Graphs and charts</p>
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