



Curriculum Area:

Mathematics GCSE learning plan

Intent

Curriculum Statement:

In Corby Business Academy Maths Faculty, our intent is for the curriculum to be designed to ensure that students receive a high-quality mathematics education. The curriculum will develop students' ability to reason mathematically, help to develop an appreciation of the beauty and power of mathematics and have a sense of enjoyment and curiosity about the subject. The curriculum will enable students to become fluent in the fundamentals of mathematics through varied and frequent practice with increasingly complex problems over time, so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. Our curriculum enables students to reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language. The curriculum will allow students to solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. Students who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material will consolidate their understanding, including through additional practice, before moving on.

Personal development

Mathematics can be enjoyed as a worthwhile activity for its own sake and as a powerful tool in a wide range of applications. Enjoyment stems from the creative and investigative aspects of mathematics, from developing mathematical ways of perceiving the world and recognising underlying structures and connections between mathematical ideas. Mathematics is a subject that empowers students to prove results. Students develop their problem-solving, decision-making and reasoning skills through working on a range of tasks. Mathematics enables students to understand the numerical data related to becoming and staying healthy. Monitoring nutritional intake, blood sugar levels and cardiovascular health are all examples where mathematics assists understanding and can lead to making healthy decisions. By becoming financially capable, young people are able to exert greater control over factors affecting their health such as housing and money management. Strategy games and logic puzzles are an important part of maintaining mental health. Understanding risk through the study of probability is a key aspect of staying safe and making balanced risk decisions. Students learn to understand the probability scale and use it as a way of communicating risk factors. They develop an understanding of how data leads to risk estimates. By understanding probability and risk factors young people are able to make informed choices about investments, loans and gambling. An understanding of mathematics, and confidence in using a variety of mathematical skills, are both key to young people's ability to play their part in modern society. The skills of reasoning with numbers, interpreting graphs and diagrams and communicating mathematical information are vital in enabling individuals to make sound economic decisions in their daily lives. Mathematics skills and habits of mind are highly prized by many employers and mathematics is a gatekeeper to many careers and professions. Having confidence and capability in mathematics allows students to develop their ability to contribute to arguments using logic, data and generalisations with increasing precision. This in turn allows students to take a greater part in a democratic society. Becoming skilled in mathematical reasoning means students learn to apply a range of mathematical tools in familiar and unfamiliar contexts



Year 10- Content		Assessments		CEIAG
		Topics	Assessment type	
Term 1	Integers	Ordering positive integers Ordering negative integers Addition and subtraction of positive integers Multiplication and division of positive integers Addition and subtraction of negative integers Multiplication and division of negative numbers Place value: multiplying and dividing by 10 Order of operations	On-going in class formative assessment using FtG assessments Summative end of term assessment focusing on the skills learnt this term. It will also include knowledge covered previously.	The ability to understand and manipulate number is necessary in all careers. A scientist will use powers when working with very small quantities e.g. weights of molecules, atoms etc. Astronomers will use powers to measure large distances
	Powers and roots	Prime numbers, prime factorisation Factors, multiples, HCF and LCM Powers and roots Using standard form Rounding Rounding to significant figures		
	Algebraic techniques	Algebraic expressions Collecting like terms Multiplying and dividing algebra Substitution Algebra terminology Expanding brackets Factorising expressions Geometric notation Points and lines		
	Properties of shapes	Properties of 2D shapes		
Term 2	Decimals	Ordering decimals Ordering fractions Addition and subtraction of decimals Multiplication and division of decimals Addition and subtraction of fractions Multiplication and division of fractions Converting decimals to/from fractions	On-going in class formative assessment using FtG assessments Summative end of term assessment focusing on the skills learnt this term. It will also include knowledge covered previously.	Decimals are used anywhere money is used
	Fractions	Simplifying fractions Mixed numbers and improper fractions Fractions of amounts		

	<p>Angles in parallel lines</p> <p>Collecting data</p> <p>Data analysis</p>	<p>Increasing/decreasing by fractions Fraction problems Angles in parallel lines</p> <p>Collecting data, frequency tables</p> <p>Two-way tables Mode Mean Median Range</p>		<p>into different equal parts, fractions can be found almost anywhere Pilots will use angles when flying planes to ensure they remain on the correct course</p> <p>Statisticians will use averages/graphs and probability to analyse results, see patterns in data and plan for the future using probabilities</p>
<p>Term 3</p>	<p>Percentages</p> <p>Expressions and equations</p> <p>Angles in polygons</p> <p>Units</p>	<p>Converting percentages to/from fractions Converting percentages to/from decimals Percentages of amounts Percentage increase/decrease Percentage change Percentage problems Working with money</p> <p>Index laws Changing the subject Linear equations Quadratic expressions</p> <p>Angles in polygons</p> <p>Metric units Units of measure: Length Units of measure: Mass Units of measure: Volume/capacity Units of measure: Time Units of measure: Area</p>	<p>On-going in class formative assessment using FtG assessments Summative end of term assessment focusing on the skills learnt this term. It will also include knowledge covered previously.</p>	<p>A sports analyst will use percentages to measure performance, compare athletes, track improvement. Someone working in the financial sector will use percentages to calculate investment performance, costs for borrowing and lending money. Business and retail workers will calculate percentage profit, calculate discounts on products</p> <p>Financial officers will use formulae to work out pricing structures e.g. for car hire, gas/electricity pricing</p>
<p>Term 4</p>	<p>Ratio</p> <p>Coordinates and graphs</p>	<p>Simplifying ratios Dividing in a ratio Fractions and ratio</p> <p>Coordinates Midpoints Plotting straight line graphs</p>	<p>On- On-going in class formative assessment using FtG assessments Summative end of term assessment focusing on the skills learnt this term. It will also include knowledge covered previously.</p>	<p>Chefs and others on the hospitality industry will use ratio when scaling recipes</p> <p>Graphs can be used to summarise situations and to model potential outcomes. They can be use in finance, science and STEM pathways.</p>

	Transformations	<p>Gradient Linear equations on graphs Simultaneous equations</p> <p>Translations Reflections Enlargements Rotations Describing transformations</p>		
Term 5	Probability	<p>Probability scale Probability of single events Experimental probability Multiple event probability Frequency trees (Construct and complete) Listing systematically</p>	<p>On-going in class formative assessment using FtG assessments Summative end of term assessment focusing on the skills learnt this term. It will also include knowledge covered previously.</p>	<p>Statisticians will use averages/graphs and probability to analyse results, see patterns in data and plan for the future using probabilities</p>
	Perimeter and area	<p>Calculating perimeter Calculating area Circles Circumference Circle area</p>		<p>Decorators will need to calculate them amount of paint required to paint a wall or a fence</p>
	Representing data	<p>Bar charts Pictograms Pie charts Stem and leaf diagrams</p>		<p>Statisticians will use averages/graphs and probability to analyse results, see patterns in data and plan for the future using probabilities</p>
Term 6	Proportion	<p>Direct proportion Recipes Currency conversion Conversion graphs Linear sequences Other sequences (Geometric and Fibonacci, not quadratics) Properties of 3D shapes Nets of 3D shapes Volume of cuboids Volume of prisms and cylinders Scatter diagrams</p>	<p>On-going in class formative assessment using FtG assessments Summative end of year assessment. This will take the form of a set of 3 papers and will cover all content covered so far</p>	<p>Bakers might use proportion to scale recipes or staffing schedulers may use this to calculate staffing requirements</p>
	Sequences			<p>Cryptographers need to recognise and summarise patterns</p>
	Volume			<p>Designers/engineers need to know exact areas/volumes when designing buildings</p>
	Scatter diagrams			



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Year 11- Content		Assessments		CEIAG
		Topics	Assessment type	
Term 1	Percentages in context	Calculating with standard form Reverse percentages Simple interest Estimating answers Money problems Financial statements Income and rates of pay Profit and loss Best buys	On-going in class formative assessment using FtG assessments Summative end of term assessment focusing on the skills learnt this term. It will also include knowledge covered previously	A sports analyst will use percentages to measure performance, compare athletes, track improvement. Someone working in the financial sector will use percentages to calculate investment performance, costs for borrowing and lending money. Business and retail workers will calculate percentage profit, calculate discounts on products
	Real life graphs	Distance-time graphs Sketch quadratic graphs		
	Proportion	Inverse proportion Proportion graphs		
Term 2	Congruence and similarity	Congruence Similar shapes	On-going in class formative assessment using FtG assessments Summative assessment. This will take the form of a formal PPE/ mock exam. 3 x full assessments.	Statisticians will use averages/graphs and probability to analyse results, see patterns in data and plan for the future using probabilities Bearings are used by pilots and sailors to ensure they remain on course
	Bearings	Bearings		
	Venn diagrams	Listing elements in a set Venn diagrams Probability from Venn diagrams		
	Data analysis	Choosing averages Averages problems		
Term 3	Pythagoras' Theorem	Pythagoras' Theorem Applying Pythagoras' Theorem Converse of Pythagoras' Theorem	Revision and exam question practice focusing specific areas identifies. This will be informed by PPE/ mock exams, formative assessment and class work.	Sailors might use Pythagoras/trigonometry to calculate distances between different places, bearings to travel on. Surveyors/architects will use calculate angles/length etc
	Trigonometry	Trigonometric ratios and acute angles Trigonometry – unknown sides Trigonometry – unknown angles Applying trigonometry		
Term 4	Revision and exam preparation		Revision and exam question practice focusing specific areas identifies. This will be informed by PPE/ mock exams, formative assessment and class work.	



Term 5	Exam series			
Term 6	Exam series			