Holy Cross
CATHOLIC HIGH SCHOOL

Maths Department

Mathematics

	Enrichment and Personal Development	Links to Careers in Maths	Catholicity in the Curriculum	Interdisciplinary Learning
Stage 2/3	• Pupils will explore the application of mathematics in money. Pupils will be given problems on how to budget money. • Pupils will take part in interactive data collection activities, and work in groups to present their findings. • Pupils will learn to read scales to measure weight and temperature in context such as baking. • Pupils will use symmetry to investigate mathematical patterns and shapes e.g. rangoli patterns and architecture. • Pupils interpret timetables and distance tables to plan journeys.	The use of mathematics in landscape gardening, home decorating and building.	Creation and the environment: Pupils understand and appreciate the symmetry in nature. Option for the poor: Pupils reflect on the concept of negative numbers and how the impact of overdrafts and debt affect people's lives. Dignity: Pupils study life skills in order to equip them for life eg telling the time and handling money.	Science: In the Waves Topic, pupils will use the finding missing angles and identifying lines to correctly identify angles of reflection. Pupils will be expected to use negative, decimal, and fractional numbers to calculate different results (eg Temperature changes), using the skills they have learnt in maths. During Forces, pupils will apply their scale drawing skills to create box diagrams Music: Pupils will use fractions to describe the length of different notes in comparison to a beat, such as a crotchet being a quarter of a beat. Food Technology: Pupils will use their knowledge of measures to weigh ingredients.
Stage 4	• Pupils will learn about the use of tessellation in exploring mathematical patterns and shapes that may be used in tiling. • Pupils will learn how to budget through mathematical problems. • Pupils solve ratio problems involving recipes. • Pupils explore 3D drawings and produce plan and elevation diagrams. • Pupils calculate percentages relating to costs of amounts.	Pupils will understand how inches are useful for different career paths, such as joiners fitting kitchens. Pupils will learn calculations skills needed for budgeting. Pupils learn to calculate discounts and percentage increase used in retail careers. Pupils learn how to use ratios to scale recipes and find different portion sizes use in catering industry.	Option for the poor: Pupils understand how taxation benefits the vulnerable in society through income tax banding. Pupils consider the value of items by looking at best buys.	Computer Science: Pupils will use the order of operations to solve logic problems Powers of 2 are used within binary, and to describe how many bytes are used. Science: Within the Particles Topic, pupils are expected to understand the meaning of a negative number to understand what it means for a particle to be negatively charged. Probability is also used within Genetics to express the chance of an organism having certain traits Pupils are expected to apply their knowledge of ratios to solve problems involving moles, and yields of chemical reactions. Food Technology: Pupils will use their skills from Ratio and Proportions in maths to correctly calculate the amounts of ingredients needed for recipes. Geography: Pupils will analyse data of case studies using different averages taught in maths.
Stage 5/6	• Pupils will study the use of questionnaires to collect unbiased data and improve their pattern spotting abilities. • Pupils collect and compare data sets learning how to draw conclusions. • Pupils will interpret large and small numbers in the media eg distances between planets. • Pupils will learn the appropriate metric measures applicable in different situations. • Pupils will calculate values on speed, distances, and time, and learn how to calculate other compound measures. • Pupils will incorporate VAT into considerations about money.	The Fibonacci sequence is relevant in careers, primarily by providing concepts and tools for areas like software development, finance, and project management. Learning about VAT, useful in accounting, finance, or tax advisory roles. Shape and Construction – Architect.	Creation and the environment: Pupils explore data relating to climate change and display this in time series graphs. Option for the poor - Pupils consider the value of items by looking at best buys. Compare the price of goods in different countries using currency conversions.	Science: Within the Forces topic, pupils will measure bearings using methods learnt in maths Vital Vocabulary such as "diameter", "correlation", and "kilo" are used throughout science in many units, such as finding the diameter of a cell. Formulas used in science are often introduced in maths lessons to help build familiarity and confidence with them. Pupils use standard form to scale values correctly when dealing with very large or small units, such as to measure the distance between planets. When drawing graphs, the gradient of a line often represents important information, such as velocity, meaning pupils will have to apply their knowledge of straight-line graphs to solve problems. Units such as nano-, giga- and micro- are frequently used in science. Pupils will use skills about unit conversion learnt in maths to interact with these units. Pupils will be able to describe the trends of graphs using their knowledge of interpreting data from maths. Pupils will use percentage change to calculate changes in mass in areas such as monitoring cell size, and chemical reactions. Pupils will frequently use formulas and mathematical manipulation to answer problems involving rates of change. Computer Science: Pupils will be made aware that some rules/words in maths are also in computer science, but applied in different ways and have different meanings. Geography: Pupils will apply their knowledge of pie charts in Geography to be able to interpret Geographical information. Product Design: Converting between different measurements is knowledge they will use for their designs.

Key areas of focus in this unit of work
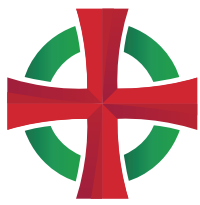
Subject specific knowledge

Assessment (including both formative and summative)

Interdisciplinary Learning

Progression of learning

Maths Department

	Enrichment and Personal Development	Links to Careers in Maths	Catholicity in the Curriculum	Interdisciplinary Learning
Stage 7	• Pupils will use statistics to represent and summarise data sets. • Pupils will apply compound growth/decay to calculate finances.	Careers involving statistics in the UK include roles as Data Analysts, Data Scientists, Statisticians, and Actuaries, requiring strong analytical skills to interpret data and inform decisions across sectors like finance, government, and tech. Roles include financial analyst, actuary, investment analyst, and roles in banking and insurance. Trigonometry – Engineering	Dignity of work and participation and option for the poor: Pupils explore the purpose and impact of tax expenditure through percentages and reading pie charts. Through exploring different savings accounts and investments, pupils understand the benefit of saving money in order to prepare them for life.	Science: Surface Areas often require n:1 or 1:n ratios to calculate, meaning pupils must apply their knowledge from Ratios in maths. Pupils will use symbols learnt in maths to understand questions containing Δ to represent change. Pupils will apply their knowledge on direct proportion in different scientific scenarios, such as identifying a directly proportional relationship between two variables. During experiments, knowledge about error intervals is often used to show the degree of accuracy of results obtained by the pupils. Product Design: Many projects in product design will use trigonometry to determine the sizes of angles and lengths in the project. They will also use their knowledge from maths to find the volume of products they are designing/making.
Stage 8/9	• Pupils will further their knowledge in the meaning of velocity, and how it can be used to find distances and times. • Pupils will apply trigonometry to 3D situations to solve geometric problems. • Pupils will explore the relationship between mathematics and computer science, relating to cyber security.	Pupils will learn algebraic manipulation to a high level used in STEM careers Pupils learn how to use advanced trigonometric ratios to find missing sides and angles which will be used in careers like architecture and structural engineer. Boxplots are learnt by pupils, used in data science and market research. Cybersecurity careers	Dignity: Pupils are aware of the dangers of gambling through probability.	Science: Pupils will be expected to use vocabulary learnt in maths to describe different situations, such as using "the rate of increase slows down" when interpreting limiting factor graphs. Higher Pupils would also be expected to use their knowledge on finding gradients of non-linear graphs to find rates of change. Pupils will use statements of proportionality to describe the inverse square law in photosynthesis and must be able to apply substitution to validate these laws. Higher Pupils would be expected to use their knowledge on finding gradients of non-linear graphs to find rates of change. Pupils would also be expected to know how to find areas underneath graph lines, which can be used to find distance covered on certain graphs.

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