Christ the King Catholic High School: Mathematics - Curriculum Overview 2023 - 2024

KEY STAGE 2

The Mathematics National Curriculum in England for Key Stage 1 and Key Stage 2.

TERM 1

TERM 2

TERM 3

YEAR 7

Unit 1: Analysing and displaying Data
Key Skills: mode, median, range, tally charts, pictograms, bar charts, grouped frequency tables and comparing data
Unit 2: Number Skills
Key Skills: BIDMAS, addition, subtraction, division, multiplication, money, time, negative numbers, factors, multiplies, primes, square numbers
Unit 3: Expressions, Functions and Formulae
Key Skills: function machines, collecting like terms, multiplying terms, writing expressions, substitution, writing formulae
Unit 4: Decimals and Measures
Key Skills: ordering decimals, decimal places, multiplying and dividing by 10, 100 & 1000, reading scales, mental calculations, operations with decimals, perimeter, area
Unit 5: Fractions and Percentages
Key Skills: comparing fractions, simplifying fractions, adding and subtracting fractions, fraction of an amount, fractions as decimals, percentage introduction, FDP, percentages of an amount
Unit 6: Probability
Key Skills: probability scale, calculating probability, experimental probability, expected outcomes
Unit 7: Ratio and Proportion
Key Skills: direct proportion, unitary method, writing ratios, equivalent ratios, ratios and fractions, proportion and percentages
Unit 8: Lines and Angles
Key Skills: measure and draw angles, drawing triangles, angle reasoning, angles in triangles and quadrilaterals
Unit 9: Sequences and Graphs
Key Skills: term-to-term rule, patterns and sequences, reading & plotting coordinates, midpoints, geometric sequences, horizontal and vertical lines, straight-line graphs, nth term
Unit 10: Transformations
Key Skills: congruent shapes, enlargements, symmetry, reflection, rotation, translations, combining transformations

YEAR 8

Unit 1: Number
Key Skills: estimation, long division, dividing decimals, operations with negative numbers, powers and roots, calculator use, factors and multiples, prime factor form, HCF, LCM
Unit 2: Area and Volume
Key Skills: area of a triangle, parallelogram & trapezium, volume & surface area of cubes and cuboids, nets and elevations, 2D representation of 3D shapes, metric & imperial units
Unit 3: Statistics, Graphs and Charts
Key Skills: pie charts, two-way tables, stem and leaf diagrams, scatter graphs, misleading graphs
Unit 4: Expressions and Equations
Key Skills: simplify expressions, expand brackets, factorise expressions, solving linear equations
Unit 5: Real-life Graphs
Key Skills: conversion graphs, distance-time graphs, line graphs, non-linear graphs
Unit 6: Decimals and Ratio
Key Skills: decimal places, significant figures, multiplying and dividing by decimals, dividing using ratios, ratio and proportion with decimals
Unit 7: Lines and Angles
Key Skills: properties of quadrilaterals, alternate angles, angles in parallel lines, angles in irregular polygons, solving geometric problems
Unit 8: Calculating with Fractions
Key Skills: ordering fractions, add, subtract, multiply and divide fractions, calculations with mixed numbers
Unit 9: Straight-line Graphs
Key Skills: direct proportion graphs, gradients of graphs, equations of straight lines
Unit 10: Percentages, Decimals and Fractions
Key Skills: FDP, proportion, one number as a percentage of another, percentage of an amount, percentage increase/decrease, reverse percentage

YEAR 9

.
Unit 1: Indices and Standard Form
Key Skills: rules of indices, estimation, negative indices, standard form for large and small numbers
Unit 2: Expressions and Formulae
Key Skills: solve equations with fractions, equations with unknown on both sides, substitution, writing and using formulae, rearranging formulae, indices with algebra, expanding double brackets
Unit 3: Dealing with Data
Key Skills: data collection, grouped frequency tables, questionnaires, mean from a frequency table, comparing data
Unit 4: Multiplicative Reasoning
Key Skills: enlargements, negative and fractional scale factors, reverse percentage, percentage change, compound measures, direct and inverse proportion
Unit 5: Constructions
Key Skills: maps and scale diagrams, perpendicular bisector, angle bisector, constructing accurate triangles
Unit 6: Sequences, Inequalities, Equations and Proportion
Key Skills: nth term, geometric and quadratic sequences, representing inequalities, solving equations involving fractions and powers, graphs of direct and inverse proportion
Unit 7: Circles, Pythagoras and Prisms
Key Skills: area and circumference of a circle, Pythagoras theorem, volume and surface area of prisms, calculating bounds and error intervals
Unit 8: Graphs
Key Skills: equation of parallel lines, drawing straight-line graphs using the equation, graphical simultaneous equations, quadratic graphs
Unit 9: Probability
Key Skills: mutually exclusive events, experimental and theoretical probability, sample space diagrams, probability using two-way tables and venn diagrams
Unit 10: Comparing Shapes
Key Skills: congruent and similar shapes, similar triangles, trigonometry to find unknown angles and sides,

YEAR 10

Unit 1:
Foundation: number work
Higher: number work, standard form and surds
Unit 2:
Foundation: algebra basics
Higher: algebra basics, solving equations, sequences
Unit 3
Foundation: pie charts and scatter graphs,
Higher: scatter graphs, averages
Unit 4
Foundation: fractions and percentages
Higher: fractions, percentages, ratio and proportion
Unit 5
Foundation: equations, inequalities and sequences
Higher: angles in parallel lines, polygons, Pythagoras theorem and trigonometry
Unit 6
Foundation: angle reasoning, angles in parallel lines and polygons
Higher: linear, quadratic and cubic graphs
Unit 7
Foundation: sampling and averages
Higher: area, volume, accuracy and bounds
Unit 8
Foundation: perimeter, area and volume
Higher: transformations, construction, loci and bearings
Unit 9
Foundation: real-life graphs, straight-line graphs
Higher: quadratic and simultaneous equations, inequalities
Unit 10
Foundation: transformations
Higher: probability

YEAR 11

Unit 11:
Foundation: ratio and proportion
Higher: multiplicative reasoning
Unit 12:
Foundation: pythagoras and trigonometry
Higher: similarity and congruency
Unit 13
Foundation: probability
Higher: further trigonometry
Unit 14
Foundation: multiplicative reasoning
Higher: cumulative frequency, box plots and histograms
Unit 15
Foundation: plans, elevations, construction, loci and bearings
Higher: expanding binomials, graphs of circles, cubes and quadratics
Unit 16
Foundation: expanding double brackets, factorising and solving quadratics
Higher: circle theorem
Unit 17
Foundation: circles, cylinders, cones and spheres
Higher: rearranging formulae, algebraic fractions, rationalising surds
Unit 18
Foundation: reciprocals, indices and standard form
Higher: vectors and geometric proofs
Unit 19
Foundation: similarity, congruency and vectors
Higher: area under graphs, direct and inverse proportion
Unit 20
Foundation: rearranging formulae, simultaneous equations

Cultural capital:

Extra-curricular: UKMT challenges for KS3 students; Oil Trading Game for Year 8 students; Cluedo Investigation for Year 9 students; Visit to LUSOM for Year 10 and Year 11 students; Lancaster University Masterclass for Year 10 students.

Christ the King Catholic High School: Mathematics - Curriculum Overview 2023 - 2024

ENRICHMENT & PERSONAL DEVELOPMENT	CAREERS EDUCATION

YEAR 7	Year 7 students take part in the United Kingdom Mathematics Trust (UKMT) Challenge. The challenge has children utilise their mathematical reasoning and fluency in using the basic mathematical techniques learned from school to solve unique and interesting questions and challenges on the paper.	Students study a range of different topics. There is a focus on basic numeracy skills and developing real-life Mathematical skills and solving Money and Time problems. All careers involving numbers will benefit from this part of the curriculum. Some examples would be accounting, finance and engineering careers. All of these need a good grip on calculating and managing numerical data to succeed.	
YEAR 8	Year 8 students will take part in the Oil Trading Game. This activity links Mathematics, Science and Business Enterprise. This activity uses a realistic simulation of oil trading to explore supply and demand, market forces, and risk, in a fast-moving enterprise activity. Students also take part in The Real Game. It introduces students to the world of work and helps them develop an understanding of the options and opportunities available to them and the implications and importance of their choices. It is a useful step towards individual learning and career planning, including subject choice. It uses elements of role play, group work and individual investigation to help students develop knowledge, skills and attitudes they will need to assess and make decisions about further education, training and career options.	Students are introduced to ratios in Year 7 and then there is further study in Year 8. Ratios are an important part of the curriculum. Calculating ratios and proportions, using scale factors to compare lengths, and understanding how to divide quantities into ratios are some of the things covered in Year 8. Measuring and comparing quantities is a useful application in many career paths including financial analysis, measuring returns with investments and calculating the effectiveness of a marketing campaign. Also careers in catering and construction, will massively benefit from having a good grasp of ratios.	
YEAR 9	Year 9 students will take part in the Cluedo Murder Mystery Challenge. Students have to work in a team to solve different tasks. They will need to communicate effectively, work together and independently to solve the murder mystery. Whilst studying percentages students have the opportunity to study bank accounts and learn about interest, tax, discounts and profit and loss. They take part in purchasing pretend shares in companies and calculate the value of their shares after a percentage increase or decrease.	Students study Probability and Statistics. Probability covers topics like calculating probabilities of simple events and using probability trees, whilst statistics include understanding averages, and constructing and interpreting graphs and charts. There are many different careers probability and statistics can apply to, especially in our data-driven age. Market research, healthcare and the civil service are all options for those who enjoy statistics. As for probability, a strong understanding of the matter is needed for analysing risk and making informed decisions. This does well in data science, computer engineering and actuarial careers.	
YEAR 10	Year 10 students are visited by staff from Lancaster School of Mathematics (LUSOM). This is to encourage the more students to study Mathematics at college and consider a career in Mathematics. They are then encouraged to attend a school trip to LUSOM and visit the campus during their Open Evening. Students are also encouraged to apply to a workshop run by the Royal Institution and the University of Lancaster. Ri Mathematics Masterclasses are series of workshops led by experts from industry, academia and education. They offer students in-depth investigations of topics in mathematics combining theory with interactive exploration.	Students study several Geometry topics which include area, perimeter and volume. Architects, engineers and product designers use these skills regularly in their jobs, as a strong understanding of geometry is needed to design objects and buildings. These are also useful skills for more hands-on jobs like builder or carpenter.	
YEAR 11	Year 11 students are given further details for the Lancaster University School of Mathematics. They have the opportunity to attend online revision classes delivered by staff from LUSOM. This will aid them in preparing for their GCSE examinations. The more able students also have the opportunity to study GCSE Further Mathematics. This will give them an additional Mathematics qualification.	Year 11 students need a good understanding of Algebra. Algebra is essential for anyone pursuing a career in STEM fields. Computer engineers use algebra to write software programs; in scientific fields to model data; and in engineering, for things like designing circuit boards and analysing systems.	
LITERACY & NUMERACY	At Christ the King Catholic High School, our Mathematics curriculum is designed to nurture essential numeracy skills including addition, subtraction, division, multiplication, fractions, decimals and percentages. The numeracy skills they learn in maths will support them when they come to the more advanced topics they will learn, such as algebra and geometry, and will be essential in a range of other subjects. Mathematics has a language all of its own. Students will study subject-specific vocabulary. This will then help them in understanding mathematical concepts.	**CATHOLIC ETHOS**	At Christ the King, our Mathematics curriculum is thoughtfully designed to cater to the needs of our students. We focus on each individual and strive to develop basic mathematical skills, in all our students, which can be used in real-life. Maths can also be used to wonder at God's Creation. Discovering Pythagoras Theorem, Trigonometry and learning about properties of shapes will make students ponder more deeply about God's creations.