Willingdon

COMMUNITY SCHOOL

CURRICULUM BOOKLET

MATHEMATICS

Think, Solve, Link

Our School Curriculum Intent

The curriculum at Willingdon Community School offers a broad, balanced, personalised and challenging educational experience, which builds on students' experiences in the primary phase of their education.

It aims to provide all students with the knowledge, understanding, skills and attitudes which are necessary if they are to become successful learners who enjoy learning, make progress and achieve the best they are capable of.

Subject Vision

At Willingdon we aim for all students to enjoy Mathematics, strive for success in the subject and understand its importance and relevance.

Mathematics is an international language, where would we be without it? A solid grounding in Maths allows us to participate in society, is integral to many career paths and essential to everyday life.

As a society we are always looking for patterns in order to predict what could happen next. Whether it be in business, social media, in nature or the spread of a virus. Mathematics gives us the skills and a way of thinking to help us to make predictions and create solutions.

We want students to be able to think, solve and link.
THINK – Students that are fluent in Maths procedures and are able to calculate with confidence.
SOLVE – Students that can reason and make decisions based on logic and patterns.
LINK – Students that can link both between different areas of maths as well as applications in the world around them.

Maths provides students with problem solving skills that they can transfer to other subjects across the curriculum as well as their day to day lives.

During their time at Willingdon students will appreciate the cultural and historical aspects of the subject whilst looking to the future. Looking forwards Maths will help them to find solutions to future questions that they have about the world around them.

Key Concepts in Mathematics

Number

Building on the work that students have already covered at KS2 we begin to look at really large and really small numbers. We study how they relate to the universe and the atoms that construct everything around us. We study the mysteries of number patterns and use them to make rules and form conjectures.

Geometry and Measure

A firm grounding in shape and space allows us to solve problems in design that help us to decorate, construct and package. We marvel at how the Egyptians managed to get perfect right angles for their pyramids and how trigonometrical problems were calculated before calculators. Geometry is intriguing and beautiful and we want students to see how it is used to create visually pleasing and efficient designs.

Algebra

Algebra allows us to solve problems and make predictions. It teaches us a logical path in solving problems. Algebra allows us to calculate unknown values and create formulas. It has wide reaching applications in business, medicine, science and technology.
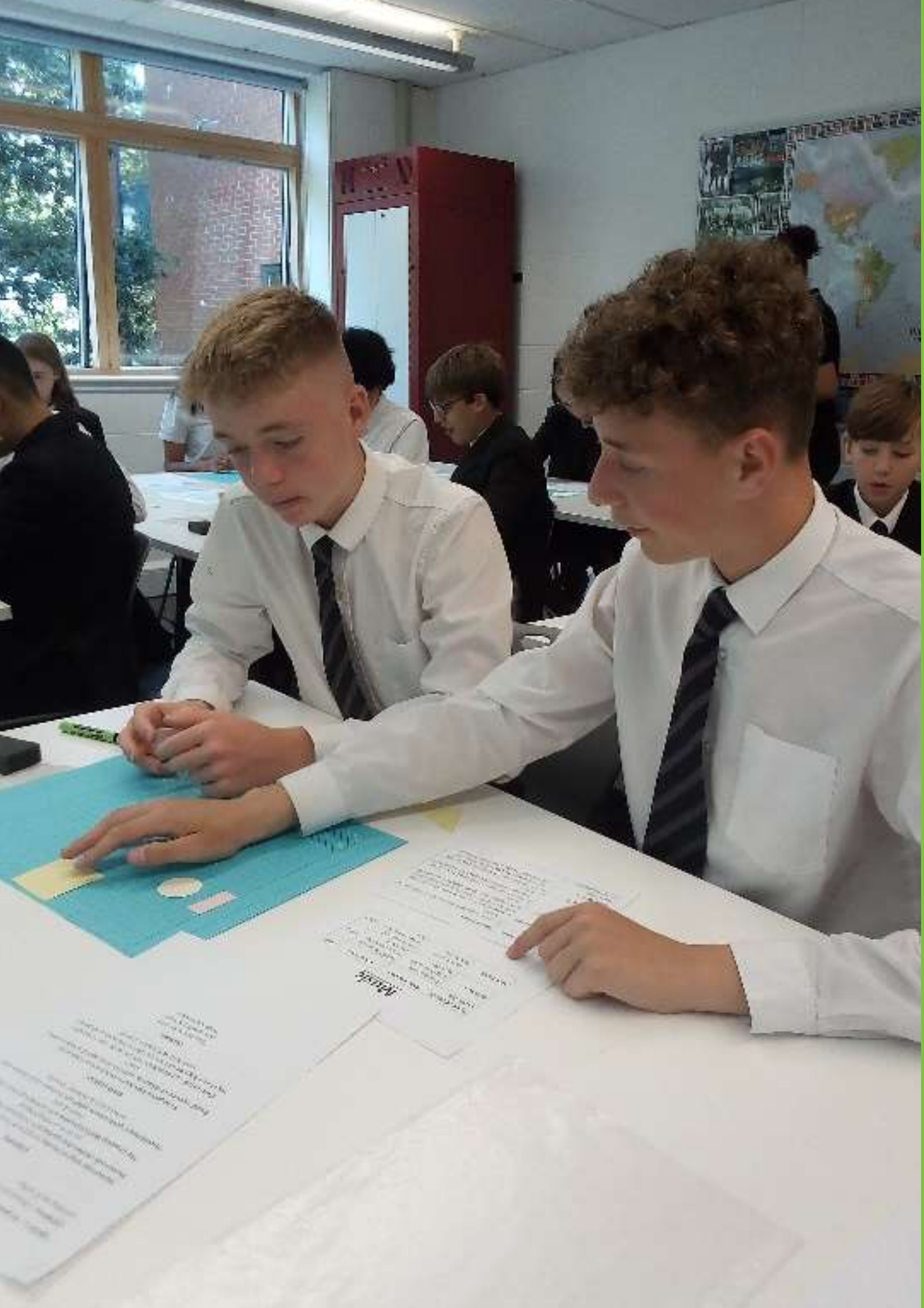
Ratio and Proportion

The study of geometry has an extremely long history, and yet continues to be the source of abstract problems that intrigue and surprise. Furthermore, it is the basis of some extremely practical applications of maths, such as those found in the field of engineering.

Statistics

We are confronted with statistics on a daily basis. How do we know that we are being presented with the full story? It is all of our responsibility to make sure that we are data literate and able to analyse the data that we are presented with. Students are encouraged to be critical and investigate ways in which data can used and misused.

Probability

Probability is the study of risk. We encourage students to look at the likelihood of different events occurring through theory, experiments and data collection to compare chances and make predictions.

Programme of Study Key Stage 3

During KS3 students will build on their primary foundations using number lines to support them develop newer areas such as ratio and proportion. Students are introduced to algebra early on so that they can interleave these skills through other topics.

	Year 7	Year 8	Year 9
Term 1	Introduction to Algebra Calculations Rounding and Estimating	Expanding and Factorising Investigating Indices Standard Form	Investigating Quadratics Non-Calculator Methods Exploring Number
Term 2	Solving Number Problems Properties of Shape FDP Equivalence	Constructing and Solving Parallel Lines Calculating with Percentages	Equations and Inequalities Maps and Scale Drawings Fraction Calculations
Term 3	Proportionality Area and Perimeter	Proportionality Measuring Circles	Proportionality Surface Area
Term 4	Sequences Fraction Arithmetic	Sequences Pythagoras' Theorem	Exploring Change Introduction to Trigonometry
Term 5	Probability Exploring Change Transformations	Probability Diagrams Exploring Change 3D Shapes	Probability Tree Diagrams Exploring Change II Enlargements and Similarity
Term 6	Investigating Statistics Number Systems	Investigating Statistics Compound Measures	Investigating Statistics Further Compound Measures

Programme of Study Key Stage 4

In Years 10 & 11 students develop and extend their ability solve multi-step problems, such as those they will encounter on a GCSE exam paper. They are regularly expected to decode a written problem, and to communicate their reasoning clearly.

	Year 10	Year 11
Term 1	Algebraic Arguments Algebraic Fractions Surds and Indices	Functions Investigating Circles Vectors
Term 2	Quadratic Equations Rates of Change Financial Maths	Further Graphs Loci and Constructions
Term 3	Reasoning with Proportion Volume of Solids	Revision
Term 4	Special Sequences Further Trigonometry	Revision
Term 5	Simultaneous Equations Curved Graphs Further Transformations	Revision
Term 6	Analysing Data Inequalities	

RAISING ASPIRATIONS IN MATHS

A solid grounding in Mathematics opens many doors for students once they leave Willingdon Community School. The Maths Department strive to show students where the subject can lead them as well as the transferable skills that they are developing.

Our emphasis is on success, enjoyment and challenge. We want students to be aware of the value of Mathematics and to push themselves to achieve the best that they can.

BROADENING HORIZONS IN MATHS

We wish to give students the opportunity to see where Maths is used in the world around them. Maths is an international language and we try to ensure that students see how it has impacted different societies throughout history. By giving students a context for these Mathematical discoveries we can show how we benefit from their solutions today.

Beyond school we hope that students will have the confidence to use Maths in their future studies and encourage students to pursue it at their post-16 destinations. We are ambitious for our students and by taking part in the UKMT Maths Challenges along with higher education trips we can inspire students into further study.

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