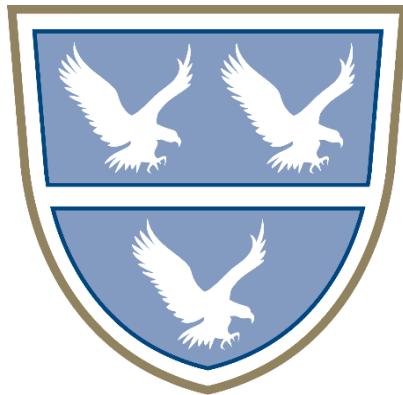


MATHEMATICS CURRICULUM MAP



Our subject vision:

Everywhere you look you will see Mathematics in action. From the plants in a field to the screen you are reading this on, Mathematics is embedded into our natural and constructed world. Fitzharrys students will become curious about the fascinating construct that is Maths and how they can use it to solve problems; we aim to spark the joy of Maths in all that we do.

Our intention is to create students who have mastered the skills and consumed the knowledge they will need for their futures, no matter what form that future may take.

Fitzharrys Maths students are stretched and supported dynamically to achieve their very best; we use diagnostic assessment to ensure that all students are learning the concepts most important to them.

We aim to ensure that students feel confident that they are learning; progress in Maths is visible and celebrated.

We want to create students who can confidently walk into their exams at the end of their time at school, exams that will open doors to their futures beyond Fitzharrys

How this document works:

This Curriculum Map will show you everything we do in Maths. It shows the learning journey from year 7 to year 11 and beyond.

At each point it will show you what is covered and how it will be assessed. Click on each topic and it will automatically take you to an explanation of why we learn it.

If you have any further questions, contact Miss Alison Twyford - Head of Maths



SUBJECT CURRICULUM MAP: KS4

Maths

Further study

Further Maths
Sciences
Art & design
Computer Science

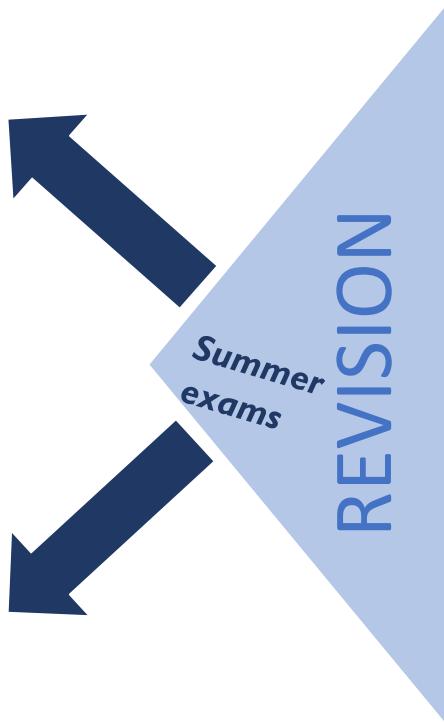
All A-Levels and many college courses require grade 4 and above. Without a grade 4 at GCSE you will need to continue to study Maths GCSE until you are 18.

Teacher

Career pathways

Computer Scientist
Economics
Banking
Architecture
Engineering
Design
Marketing

...most jobs require some element of Maths!



28. Iteration

- Use iteration to solve equations

27. Complex Graphs

- Cubic graphs
- Trigonometric graphs
- Transformations of graphs
- Exponential graphs

26. Sine & Cosine rules

- Know how and when to use the sine and cosine rules

25. Vectors

- Understand and use vectors

24. Surds

- Arithmetic with surds
- Rationalise surds

23. Circle Theorems

- Know and use circle theorems to solve angle problems

22. Further Graphs

- Non linear graphs

March Mock Exams

Foundation tier students begin revision after topic 22.

Year 11

17. Transformations

- Reflect
- Rotate
- Translate
- Enlarge

18. Further Equations & Graphs

- Non linear graphs
- Quadratic equations
- Graphing Inequalities

19. Data

- Work with averages
- Statistical diagrams
- Statistical analysis

20. Measures & Constructions

- Scales
- Constructions
- Compound measurements

21. Proportions

- Direct proportion
- Inverse proportion

Mock exams & final tier decisions made

November Mock Exams

16. Probability

- Calculating probabilities
- Probability diagrams
- Experimental probability

15. Similarity & congruence

- Understand the connection between similar shapes
- Understand the connections between congruent shapes

For each topic you will complete a diagnostic and progress test. The progress test results will be sent to parents who are signed up to the Mini Test website.



Trips and visits;

- Senior maths team challenge
- Year 10 Maths Feast
- Royal Institution Mathematical masterclasses
- Online enrichment events

14. Simultaneous equations

- Solve simultaneous equations

13. Sequences

- Types of sequence
- Sequence formulae
- Drawing sequences as diagrams and graphs

12. 3D shapes

- Volume of shapes
- Surface areas of shapes

11. Algebra

- Identities
- Formulae
- Quadratics

10. Angles & Plans

- Angles facts
- Solve complex angle problems
- Plan drawings
- Isometric drawing

9. Pythagoras & Trigonometry

- Use Pythagoras theorem
- Use Trigonometry with right angles triangles

Year 10



SUBJECT CURRICULUM MAP: KS3

KS4

6. Area & Perimeter

- Areas of key shapes
- Compound areas
- Perimeters of shapes including circles & sectors

7. Percentages

- Understand percentage conversions
- Use multipliers to calculate percentages
- Calculate percentage change
- Confidently problem solve with percentages

8. Ratio

- Understanding ratios
- Sharing amounts into ratio
- Solving ratio problems

5. Fractions & Decimals

- Arithmetic with fractions
- Arithmetic with decimals

4. Equations

- Solve equations
- Solve more complex equations
- Solve inequalities

For each topic you will complete a diagnostic and progress test. The progress test results will be sent to parents who are signed up to the Mini Test website.

Trips and visits

- Girls conference
- Team Maths Challenge @ Oxford University
- Assisting with Primary Maths Team Challenge
- Royal Institution Mathematical Masterclasses

3. Expressions

- Writing in algebra
- Algebraic manipulation
- Collecting like terms
- Expand
- Factorise

2. Rounding

- Rounding to decimal places
- Rounding to significant figures
- Error bounds

1. Number

- Types of numbers
- Arithmetic
- Inequalities

Start of tiered GCSE Maths classes

Year 9

End of year assessment

Foundations of GCSE Revision

Revision of the Year 7 and Year 8 course.

11. Transformations, Shape & Constructions

Symmetry, Translation, Rotation, Reflection and Enlargement, Constructions and Loci, Pythagoras and Trigonometry.

Trips and visits

- Team Maths Challenge at Oxford University

For each topic you will complete a diagnostic and progress test. The progress test results will be sent to parents who are signed up to the Mini Test website.

10. Probability

Probability scale and basic probability, tree diagrams, frequency trees, sample spaces, experimental vs theoretical probability, venn diagrams.

End of year assessment

6. Statistics

Frequency Tables and Pictograms, Surveys, Line Graphs, Averages (including Grouped Frequency Tables), Pie Charts, Scatter Graphs, Bar Charts

Year 8

7. Fractions, Decimals, Percentages & Ratio

FDP conversion, finding percentages/fractions of amounts, percentage increase/decrease, four operations with fractions and decimals, sharing ratios.

8. Length, Area & Volume

Area and Perimeter of 2D shapes (including circles), working in terms of π . Finding volume and surface area of 3D shapes.

9. Sequences, Functions and Graphs

Exploring linear and quadratic sequences, understanding linear and quadratic graphs. Using $y=mx+c$.

5. Angles

Finding Missing Angles, working with Regular Polygons, Parallel & Perpendicular Lines, Bearings

For each topic you will complete a diagnostic and progress test. The progress test results will be sent to parents who are signed up to the Mini Test website.

Trips and visits

- Team Maths Challenge

4. Integers, Powers & Roots

Square and Cube numbers and roots. Factors, Multiples & Primes, Laws of Indices and Standard Form

3. Algebra

Understanding algebra, manipulating letters in maths, substitution, solving equations, forming and solving equations, expanding and factorising brackets

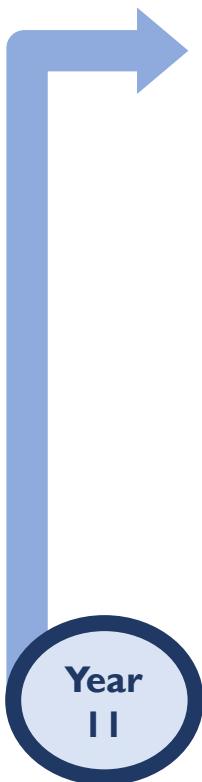
2. Place Value, Ordering & Rounding

Rounding to significant figures and decimals, ordering all number, estimating solutions.

1. Number Operations

Four Operations, Manipulating negatives, BIDMAS, basic calculator skills

Year 7



28	Iteration
Why this?	Solving equations using numerical methods is useful for equations beyond our means to solve.
Why now?	Higher level topics prepare students for A-Levels

25	Vectors
Why this?	Vectors are quantities with magnitude and direction. This is an important construct for A-Level problems
Why now?	Higher level topics prepare students for A-Levels

26	Sine & Cosine rules
Why this?	Following from trigonometry in right angled triangles this topic allows you to find angles and sides in any triangles
Why now?	Higher level topics prepare students for A-Levels

27	Complex Graphs
Why this?	The last few graphs of GCSE maths – these are looked at in more detail at A-Level.
Why now?	Higher level topics prepare students for A-Levels



Year 11

Year 10

Year 9

24 Surds

Why this? Surds are exact values. This is something that you need to be confident working in. Using surds in calculations increases accuracy greatly.

Why now? Surds are visited briefly in the first topic. Time to recap and advance to harder skills essential for A-Level Maths

19 Data

Why this? Statistical diagrams are an important part of our everyday lives and essential to all future studies/jobs.

Why now? As we come to then end of the foundation tier content we will complete the statistics content

18 Further Equations & Graphs

Why this? Graphs are images of equations, this topic allows us to look at more complex ones and re-visit linear graphs.

Why now? Foundation tiers last element of equations and graphs is completed

13 Sequences

Why this? Understanding the patters that we see in the world is an integral part of understanding the world around is.

Why now? Understanding sequences allows us to draw graphs

12 3D Shapes

Why this? Many Scientific problems require an understanding of volume. It is also essential for construction.

Why now? Back to shape for a change following our forays into algebra.

7 Percentages

Why this? Another essential Maths skill. Potentially the most visible for all of our daily lives.

Why now? You will use percentages in other GCSE subjects

23 Circle Theorems

Why this? Angles trapped in circles have specific properties that we need to learn about.

Why now? The first topic that is higher tier only. Geometry is a good place to start.

20 Constructions & Measures

Why this? Compound measures will help you to solve problems in the Sciences. Whereas constructions can help with design and art.

Why now? This topic uses specialist equipment such as compasses.

17 Transformations

Why this? How shapes can changes shapes and size is an integral part of design in all forms.

Why now? A fairly straightforward topic. Placed towards the end of year 10 to finish off Foundation tier.

14 Simultaneous Equations

Why this? Solving linked equations once again allows us to solve a different kind of Mathematical puzzle.

Why now? An extension of solving equations that doesn't appear much in foundation tier, but is an essential skill for A-Level study.

11 Algebra

Why this? Accessing quadratic equations allows you to solve more complex Mathematical problems.

Why now? Time to re-visit algebra in year 10 and look at working with more complex equations

8 Ratio

Why this? The most assessed question in GCSE Maths. Ratio is very common in real life problem solving.

Why now? Ratio is another very versatile topic that links to many others.

22 Further Graphs

Why this? Graphs allow us to understand and share maths more easily.

Why now? This covers the last section of the foundation tier. After this topic Foundation tier students will begin revision

21 Proportions

Why this? Another essential Mathematical concept that is woven through all that we do.

Why now? Understanding proportion will allow students to refresh and stretch their number skills.

16 Probability

Why this? Students can understand the probabilities of things happening and how to display those in a number of ways.

Why now? We aim to fit this in before the end of year 10 mocks so that

15 Similarity & Congruence

Why this? Another element of art, design and engineering. How shapes can vary is an interesting part of geometry.

Why now? Similar shapes are a prequal to proportion.

10 Angles & Plans

Why this? Angles and plan drawings are important for a plethora of jobs. They are also useful for home DIY!

Why now? This topic is key to geometry problems

9 Pythagoras & Trigonometry

Why this? Finding sides and angles in right angles triangles is used in many areas, including architecture and design.

Why now? After a lot of number topics is it nice to delve into some geometry!

