

KS4

Fluency

- Select & use appropriate strategies to solve increasingly complex problems, presenting work clearly & accurately.
- Work efficiently & flexibly on more complex non-standard questions.
- Use mathematical language & properties precisely.

Reasoning

- Confidently articulate how key mathematical methods work & show this.
- Begin to use algebra to support & construct arguments & mathematical proofs.
- Make & test conjectures about the generalisations that underlie patterns & relationships.

Problem-Solving

- Identify steps needed to solve an increasingly complex multi-step problem and evaluate the outcome.
- Select appropriate techniques to apply to unfamiliar & non-routine problems; interpret their solution in the context of a given problem.
- Model situations mathematically & reflect on how solutions are affected by modelling assumptions.

KS3

Fluency

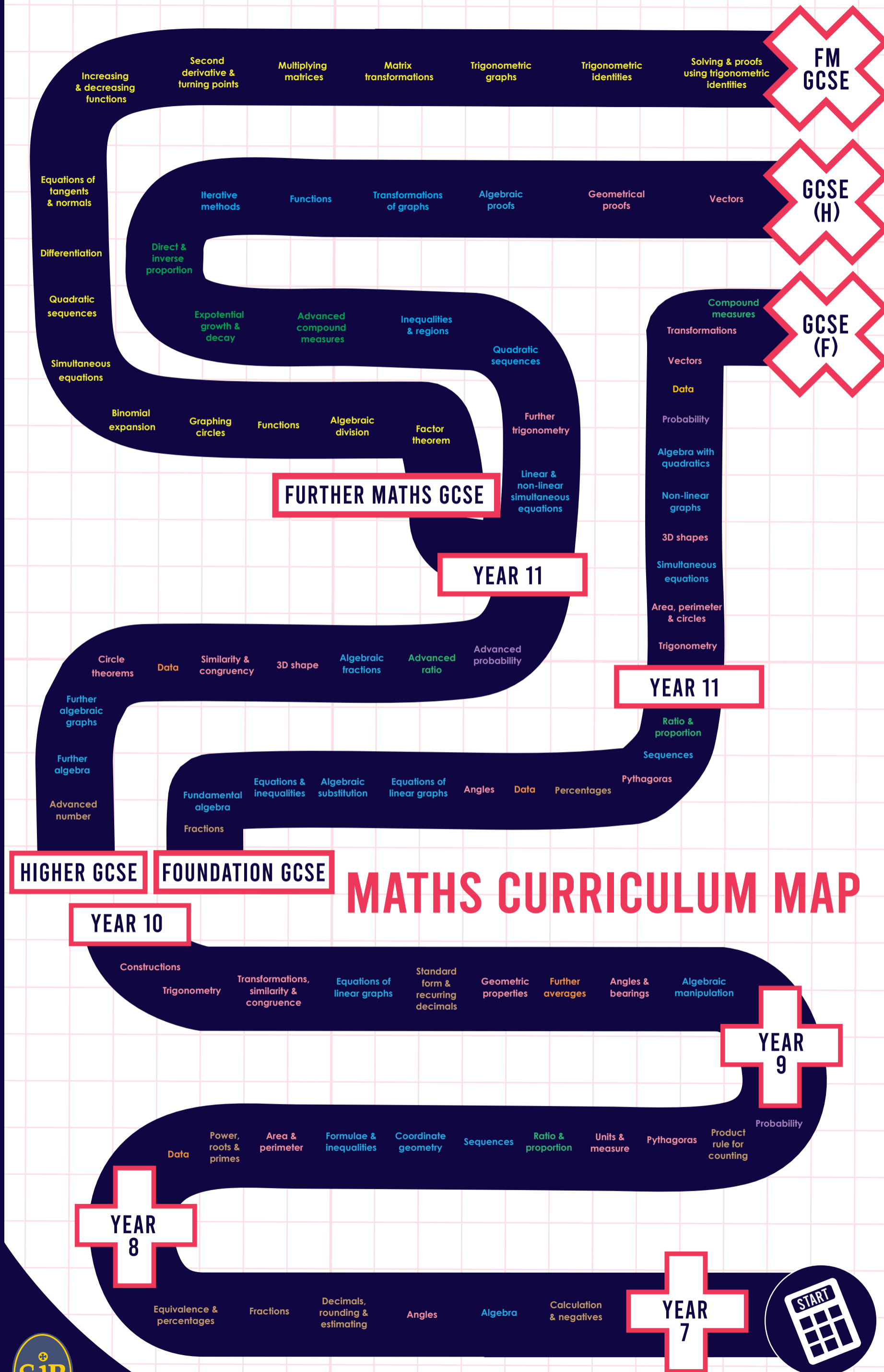
- Select & use appropriate strategies to arrive at correct solutions, presenting work clearly & accurately.
- Work efficiently & flexibly on standard & non-standard questions.
- Begin to develop the use of key mathematical language.

Reasoning

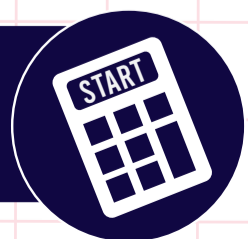
- Explain & show how methods work; begin to express arguments formally.
- Start to use algebraic notation to generalise a method used; begin to look for proofs or counter examples.
- Make & test conjectures about patterns & relationships.

Problem-Solving

- Identify steps needed to solve a multi-step problem that combines more than one topic.
- Select appropriate techniques to apply to unfamiliar & non-routine problems & work efficiently on these.
- Be able to identify connections to previous topics.



MATHS CURRICULUM MAP



YEAR 12

Algebraic expressions   Straight line graphs   Algebraic methods   Circles   Differentiation   Vectors   Integration   Exponentials & logarithms

Modelling in mechanics

Constant acceleration

Quadratics   Equations & inequalities   Graphs & transformations   Binomial expansion   Trigonometric ratios   Trigonometric identities & equations   Exponentials & logarithms

Data collection

Measure of location & spread

Forces & motion

Variable acceleration

Representation of data

Correlation

A LEVEL FURTHER MATHS

Complex numbers

Algorithms

YEAR 13

Hypothesis testing

Statistical distributions

Probability

YEAR 13

Series

Graphs & networks

Functions & graphs

Integration

Forces & friction

Differentiation

Constant acceleration

Argand diagrams

Radian measures

Moments

Projectiles

Forces & friction

Forces

Algorithms on graphs

Trigonometric functions

Parametric equations

Integration

Roots of polynomials

Trigonometry & modelling

Application of forces

Integration

Momentum & impulse

Route inspection problem

Vectors

Further kinematics

Differential equations

Work, energy & power

Matrices

Numerical methods

Regression & correlation

Binomial expansion

Proof by induction

Linear transformations

Normal distribution

Binomial expansion

Sequences & series

Elastic collisions

Critical path analysis



Volumes of revolution

Order of an algorithm



Vectors

Graphs & networks

Hooke's law

Simplex algorithm

Elasticity

Complex numbers

Simplex algorithm

Planarity algorithm

Critical path analysis

Series

Impulse & momentum

Elastic collisions in 2D

Travelling salesman

Modelling differential equations

Polar coordinates

Volume of revolution

Methods in calculus

Hyperbolic functions

Differential equations

Students at SJB study Maths to:

Develop their passion for problem-solving and nurture a love and enjoyment of the subject. From types of triangles to advanced trigonometry, Maths is fun and inclusive for all.

Equip them to be numerically literate for an ever-changing world where Maths underpins world systems through a universal language.

Learn important skills, such as critical and logical thinking, that are crucial and applicable to all areas of life. Whether our students go on to be a stage designer or an astronaut, the skills that students develop through studying Maths will equip them for wider society.

KS5

Fluency

- Apply skills across a broad range of other subjects & use as a basis for quantitative work in a range of higher education courses & employment.
- Understand coherence, progression & the interconnectivity in mathematics.
- Be aware of the relevance of mathematics to the world of work & to situations in society in general.

Reasoning

- Understand how mathematical ideas are interconnected & how mathematics can be applied to model situations mathematically to understand the physical world.
- Generalise mathematically; construct mathematical proofs; reason logically & recognise incorrect reasoning.

Problem-Solving

- Solve challenging problems in a variety of contexts; interpret solutions & communicate their interpretation effectively in the context of the problem.
- Make logical & reasoned decisions in solving problems both within pure mathematics & in a variety of contexts, & communicate the mathematical rationale for these decisions clearly.