NUMBER | ALGEBRA | GEOMETRY & MEASURES | RATIO & PROPORTION | STATISTICS | PROBABILITY

MATHS CURRICULUM MAP

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.

SKILLS STATEMENTS

FM GCSE

Increasing & decreasing functions
Second derivative & turning points
Multiplying matrices
Matrix transformations
Trigonometric graphs
Trigonometric identities
Solving & proofs using trigonometric identities

GCSE (H)

Equations of tangents & normals
Iterative methods
Functions
Transformations of graphs
Algebraic proofs
Geometrical proofs
Vectors

GCSE (F)

Differentiation
Direct & inverse proportion
Compound measures
Transformations
Vectors
Data
Probability

Quadratic sequences
Expotential growth & decay
Advanced compound measures
Inequalities & regions
Quadratic sequences
Algebra with quadratics
Non-linear graphs
3D shapes
Simultaneous equations
Area, perimeter & circles
Trigonometry

Simultaneous equations
Binomial expansion
Graphing circles
Functions
Algebraic division
Factor theorem
Further trigonometry
Linear & non-linear simultaneous equations

FURTHER MATHS GCSE

YEAR 11

YEAR 11

Circle theorems
Data
Similarity & congruency
3D shape
Algebraic fractions
Advanced ratio
Advanced probability

Further algebraic graphs
Ratio & proportion
Sequences
Pythagoras

Further algebra
Fundamental algebra
Equations & inequalities
Algebraic substitution
Equations of linear graphs
Angles
Data
Percentages

Advanced number
Fractions

HIGHER GCSE | FOUNDATION GCSE

YEAR 10

Constructions
Trigonometry
Transformations, similarity & congruence
Equations of linear graphs
Standard form & recurring decimals
Geometric properties
Further averages
Angles & bearings
Algebraic manipulation

YEAR 9

Data
Power, roots & primes
Area & perimeter
Formulae & inequalities
Coordinate geometry
Sequences
Ratio & proportion
Units & measure
Pythagoras
Product rule for counting
Probability

YEAR 8

Equivalence & percentages
Fractions
Decimals, rounding & estimating
Angles
Algebra
Calculation & negatives

YEAR 7

START

MECHANICS | PURE | STATISTICS | CORE PURE | FURTHER MECHANICS | DECISION

A LEVEL FURTHER MATHS

YEAR 12

Algebraic expressions
Straight line graphs
Algebraic methods
Circles
Differentiation
Vectors
Integration
Exponentials & logarithms
Modelling in mechanics
Constant acceleration
Forces & motion
Variable acceleration
Correlation
Representation of data
Probability
Statistical distributions
Hypothesis testing
Measure of location & spread
Data collection
Exponentials & logarithms
Trigonometric identities & equations
Trigonometric ratios
Binomial expansion
Graphs & transformations
Equations & inequalities
Quadratics

YEAR 13

Functions & graphs
Radian measures
Trigonometric functions
Trigonometry & modelling
Conditional probability
Vectors
Algebraic methods
Numerical methods
Regression & correlation
Normal distribution
Binomial expansion
Sequences & series
Differential equations
Application of forces
Further kinematics
Parametric equations
Integration
Moments
Projectiles
Forces & friction
Differentiation

YEAR 13

Complex numbers
Series
Constant acceleration
Forces
Momentum & impulse
Work, energy & power
Proof by induction
Elastic collisions
Volumes of revolution
Vectors
Complex numbers
Series
Polar coordinates
Volume of revolution
Methods in calculus
Hyperbolic functions
Differential equations
Modelling differential equations
Impulse & momentum
Elastic collisions in 2D
Travelling salesman
Planarity algorithm
Critical path analysis
Elasticity
Simplex algorithm
Hookes law
Simplex algorithm
Graphs & networks
Algorithms
Graphs & networks
Argand diagrams
Algorithms on graphs
Roots of polynomials
Route inspection problem
Matrices
Linear programming
Linear transformations
Critical path analysis
Order of an algorithm

A LEVEL MATHS

FURTHER MATHS

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.

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.

SKILLS STATEMENTS