



A Star Equivalency

# Maths Specification

# Assessment Objectives

Each GCSE maths equivalency exam has been designed to match the approximate percentage breakdown of Assessment Objectives (AO):

Assessment Objectives		Foundation	Higher
A01	Use and apply standard techniques	50%	40%
A02	Reason, interpret, and communicate mathematically	25%	30%
A03	Solve problems within mathematics and in other contexts	25%	30%
		<b>Total</b>	<b>100%</b>
			<b>100%</b>

# Distribution of Topic Areas

Each GCSE maths equivalency exam has been designed to approximately match the percentage distribution of marks per topic area:

Foundation	Number	22 - 28%
	Algebra	17 - 23%
	Ratio, Proportion and Rates of Change	22 - 28%
	Geometry and Measures	12 - 18%
	Statistics and Probability	12 - 18%
Higher	Number	12 - 18%
	Algebra	27 - 33%
	Ratio, Proportion and Rates of Change	17 - 23%
	Geometry and Measures	17 - 23%
	Statistics and Probability	12 - 18%

# Exam Summary

Format	Description
Exam type	Online or paper-based
Exam availability	All year round
Exam structure	2 papers: Paper 1 non-calculator Paper 2 calculator
Exam timing	2 hours (1 hour per paper)
Number of marks	100 marks total (50 marks per paper)
Tiers	Foundation or higher
Level	9-1 (5-1 for foundation and 9-1 for higher)
Exam content coverage	Any content covered in the subject content sections
Question types	Short answer questions, single mark questions and multi-step problems
Additional equipment required	Calculator, paper, pen, mathematical equipment

# Maths Higher Exam Content Guide

## Number

- Types of Number and BODMAS
- Multiples, Factors and Prime Numbers
- LCM and HCF
- Fractions
- Fractions, Decimals and Percentages
- Fractions and Recurring Decimals
- Rounding Numbers
- Estimating
- Bounds
- Standard Form
- Fraction Problems

## Graphs

- Coordinates and Midpoints
- Using  $y = mx + c$
- Drawing Straight-Line Graphs
- Coordinates and Ratio
- Parallel and Perpendicular Lines
- Quadratic Graphs
- Solving Equations with Graphs
- Graph Transformations
- Distance–Time Graphs
- Velocity – Time Graphs

## Algebra

- Powers and Roots
- Multiplying out Brackets
- Factorising
- Manipulating Surds
- Solving Equations
- Rearranging Formulas
- Factorising Quadratics
- The Quadratic Formula
- Completing the Square
- Algebraic Fractions
- Sequences
- Inequalities
- Iterative Methods
- Simultaneous Solutions
- Proof
- Functions

## Ratio, Proportion and Rates of Change

- Ratios
- Direct & Inverse Proportion
- Percentages
- Compound Growth and Decay
- Unit Conversions
- Speed, Density and Pressure

# Maths Higher Exam Content Guide

## Geometry and Measures

- Geometry
- Parallel Lines
- Polygons
- Triangles and Quadrilaterals
- Circle Geometry
- Congruent Shapes
- Similar Shapes
- The Four Transformations
- Area – Triangles, Quadrilateral and Circles
- 3D Shapes - Surface Area and Volume
- Enlargement and Projections
- Loci and Constructions
- Bearings

## Pythagoras' Theorem & Trigonometry

- Pythagoras' Theorem
- Trigonometry – Sin, Cos, Tan
- Trigonometry – Common Values
- 3D Trigonometry
- 3D Pythagoras
- Vectors

## Probability and Statistics

- Probability Basics
- Probability Experiments
- The AND / OR Rules
- Tree Diagrams
- Conditional Probability
- Sets and Venn Diagrams
- Sampling and Data Collection
- Mean, Median, Mode and Range
- Frequency / Grouped Frequency
- Box Plots
- Cumulative Frequency
- Histograms and Frequency Density
- Scatter Graphs
- Comparing Data Sets

# Maths Foundation Exam Content Guide

## Number

- Types of Number and BODMAS
- Multiplying and Dividing by 10, 100, etc
- Multiplying and Dividing Whole Numbers
- Multiplying and Dividing with Decimals
- Negative Numbers
- Prime Numbers
- Multiples, Factors and Prime Numbers
- LCM & HCF
- Fractions without a Calculator
- Fraction Problems
- Fractions, Decimals and Percentages
- Rounding Numbers
- Estimating
- Rounding Errors
- Powers
- Roots
- Standard Form

## Algebra

- Algebra – Simplifying
- Algebra – Multiplying and Dividing
- Multiplying Double Brackets
- Factorising
- Solving Equations
- Expressions, Formulas and Functions
- Formulas and Equations from Words
- Formulas and Equations from Diagrams
- Rearranging Formulas
- Sequences
- Inequalities
- Quadratic Equations
- Simultaneous Equations
- Proof

## Graphs

- Coordinates and Midpoints
- Straight-Line Graphs
- Drawing Straight-Line Graphs
- Straight Line Graphs: Gradients
- Straight Line Graphs:  $y = mx + c$
- Using  $y = mx + c$
- Quadratic Graphs
- Solving Equations with Graphs
- Distance–Time Graphs
- Travel Graphs
- Midpoints of Line Segments

# Maths Foundation Exam Content Guide

## Ratio, Proportion and Rates of Change

- Ratios
- Direct Proportion
- Inverse Proportion
- Percentages
- Compound Growth and Decay
- Unit Conversions
- Area and Volume Conversions
- Time Intervals
- Speed, Density and Pressure

## Shape and Area

- Properties of 2D shapes
- Congruent Shapes
- Similar Shapes
- The Four Transformations
- Perimeter and Area
- Perimeter and Area - Circles
- 3D Shapes
- 3D Shapes - Surface Area
- 3D Shapes - Volume
- Projections

## Angles and Geometry

- Angle Basics
- Five Angles Rules
- Parallel Lines
- Geometry Problems
- Angles in Polygons
- Triangle Constructions
- Loci and Constructions
- Bearings
- Map and Scale Drawings
- Pythagoras' Theorem
- Trigonometry – Sin, Cos, Tan, Common Values
- Vectors

## Probability and Statistics

- Probability Basics
- Probability Experiments
- The AND / OR Rules
- Tree Diagrams
- Sets and Venn Diagrams
- Sampling and Bias
- Collecting Data
- Mean, Median, Mode and Range
- Simple Charts and Graphs
- Pie Charts
- Scatter Graphs
- Frequency / Grouped Frequency
- Interpreting Data
- Comparing Data Sets







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