Subject	Mathematics

Exam Board	AQA	Course Code	8300

Overview

April Assessment
One 45-minute paper – Calculator Allowed One A4 sheet of paper (double sided) to be taken into it Full mathematics equipment required **Proposed Date** – Tuesday 20 April in your usual lessons (11a band P1 and 11ns band P2)

Topics to be covered	
Foundation Tier	**Higher Tier**
☐ Area of 2D shapes ☐ Calculating Averages ☐ Calculating Missing Angles ☐ Compound Measures ☐ Expressions (including multiplying and dividing) ☐ Fractions of amounts ☐ Graphs – including midpoints and gradient/intercept ☐ Highest Common Factor ☐ Lowest Common Multiple ☐ Parts of a circle ☐ Percentages ☐ Product of primes ☐ Ratio ☐ Sequences ☐ Solving Equations	☐ Algebraic Fractions/Expressions ☐ Area of 2D shapes ☐ Averages ☐ Cumulative Frequency Graphs ☐ Expressions and Identities ☐ Factoring Quadratics ☐ Fractions, Decimals and Percentages ☐ Quadratics graphs and its properties ☐ Ratio ☐ Rearranging formula ☐ Similarity and Congruence ☐ Standard Form ☐ Transformations ☐ Transformations of Graphs

May Assessment

Two 90-minute papers – Paper 1 is Non-Calculator and Paper 2 is Calculator

Full mathematics equipment will be required for both assessments

Topics to be covered

Foundation	Higher
☐ Add, subtract, multiply and divide integers and decimals	☐ Algebraic fractions, surds
☐ Angles	☐ Arc Length and Sector Area
☐ Averages, pictograms, bar charts, scatter graphs, pie charts, frequency diagrams, Venn diagrams, two-way tables	☐ Area and Perimeter of 2D shapes
☐ Bounds	☐ Arithmetic and Geometric Progressions
☐ Converting between units	☐ Being able to give answers in terms of π
☐ Distance-Time Graphs	☐ Bounds
☐ Elevations, similarity and congruent	☐ Circle theorems
☐ Equations of lines (y = mx + c and properties such as parallel lines)	☐ Direct and inverse proportion
☐ Exact trigonometric values	☐ Distance-Time Graphs
☐ Expand and factorise linear and quadratic expressions	☐ Equations of a circle
☐ Frequency trees	☐ Exact trigonometric values
☐ Identifying equations, expressions, inequalities terms and identities	☐ Expanding and factorising quadratics, including the difference of two squares
☐ Inequalities	☐ Expanding single brackets
☐ Listing strategies	☐ Forming and Solving Expressions and Equations
☐ Loci and Constructions	☐ Functions
☐ Mean and median from frequency tables (and estimated mean) and frequency diagrams	☐ Graphs – rate of change, equation of curves
☐ Negative numbers	☐ Histograms, box plots, Venn diagrams and unions
☐ Percentages & Fractions	☐ Indices, negative and fractional
☐ Pythagoras	☐ Inequalities and regions
☐ Ratio	☐ Iterative process
☐ Rearrange formula, substituting (into expressions and formula)	☐ Loci and constructions
☐ Sequences	☐ Probability and relative frequencies
☐ Solving equations	☐ Product of Prime Factors
☐ Standard form	☐ Properties of quadratic graphs
☐ Time	☐ Pythagoras, trigonometry lengths/ angles and further trigonometry
☐ Transformations	☐ Ratio - all aspects
☐ Trigonometry length/ angles	☐ Scatter Graphs
☐ Vectors	☐ Similarity from 1D to 3D
☐ Working with money	☐ Simultaneous equations
	☐ Solving quadratic equations by all methods
	☐ Transformation of graphs
	☐ Trigonometric Graphs
	☐ Vectors
	☐ Working with Fractions, Decimals and Percentages
	☐ Working with frequency tables - Estimating the mean, finding the median
	☐ y = mx + c (include parallel and perpendicular)

Useful revision resources

Websites

Mathswatch - https://vle.mathswatch.co.uk/vle/
Corbett Maths – https://corbettmaths.com/
GCSEPod - https://www.gcsepod.com/
Seneca Learning - https://senecalearning.com/en-GB/
BBC Bitesize Learning - https://www.bbc.co.uk/bitesize/examspecs/z8sg6fr
Oak National Academy - https://classroom.thenational.academy/subjects-by-key-stage/key-stage-4/subjects/maths

Recommended Revision Guides

Collins GCSE AQA revision guides - £4.50 from your mathematics teacher
Corbett Maths revision cards - £6.50 from your mathematics teacher

Recommended Calculators

Casio fx-83 GTX, fx-85 GTX, Casio Classwiz EX-991 (recommended if continuing onto A-Level Mathematics)

Revision Tips

Revision for Mathematics is based upon practice (and more practice). You need to be confident at the skills and concepts that make up the course in order to be able to work through the more challenging problems. Revision should be interactive, not just reading notes

Students can work through the Mathswatch 6 week plan (available from the Mathswatch Website under Extras > GCSE) or identify key topic areas via the Mathswatch list below. On the 6 week plan, students can split it up according to the two assessment periods)

A potential plan of action would be

- Work through the plans below watching the relevant videos (try the one minute videos first and if you do not understand then watch the longer videos)
- Attempting the interactive questions if needed
- Work through maths problems and past papers.
- Do not just read your notes/revision guides as you need to practice your Maths skills.

Any additional information will be placed into Google Classrooms and the GSHS Maths Revision Area
http://bit.ly/GSHSMathsRevision

MathsWatch - Revision lessons just a click away . . .

Subject Content

Number

Algebra

Ratio, Proportion, Rates of Change

Geometry and Measures

Probability and Statistics

Grades that will be examined:

Higher	1	2	3	4	5	6	7	8	9
Foundation	1	2	3	4	5				

You will find some formulas and information in this insert.

It will be very helpful to learn it all, off-by-heart for your exam.

Area of a circle = πr^2

Circumference of a circle = $2\pi r$

Grade 1

Place Value . . . 1
Ordering Integers . . . 2
Ordering Decimals . . . 3
Reading Scales . . . 4
Simple Mathematical Notation . . . 5
Interpreting Real-Life Tables . . . 6
Introduction to Algebraic Conventions . . . 7
Coordinates . . . 8
Simple Geometric Definitions . . . 9
Polygons . . . 10
Symmetries . . . 11
Tessellations and Congruent Shapes . . . 12
Names of Angles . . . 13
The Probability Scale . . . 14
Tally Charts and Bar Charts . . . 15
Pictograms . . . 16

Addition/Subtraction

(+ +) becomes +

(– –) becomes + eg. 5 – (-3) = 5 + 3

(+ –) becomes –

(– +) becomes – eg. 5 + (-3) = 5 – 3

Multiplication/Division

(+) × (+) becomes +

(–) × (–) becomes + eg. (-5) × (-3) = 15

(+) × (–) becomes –

(–) × (+) becomes – eg. (-5) × 3 = -15

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Grade 2

Adding Integers and Decimals . . . 17
Subtracting Integers and Decimals . . . 18
Multiplying Integers . . . 19
Dividing Integers . . . 20
Inverse Operations . . . 21
Money Questions . . . 22
Negatives in Real Life . . . 23
Introduction to Fractions . . . 24
Equivalent Fractions . . . 25
Simplifying Fractions . . . 26
Half-Way Values . . . 27
Factors, Multiples and Primes . . . 28
Introduction to Powers/Indices . . . 29
Multiply and Divide by Powers of 10 . . . 30
Rounding to the Nearest 10, 100 etc . . . 31
Rounding to Decimal Places . . . 32
Simplifying - Addition and Subtraction . . . 33
Simplifying - Multiplication . . . 34
Simplifying - Division . . . 35
Function Machines . . . 36
Generating a Sequence - Term to Term . . . 37
Introduction to Ratio . . . 38
Using Ratio for Recipe Questions . . . 39
Introduction to Percentages . . . 40
Value for Money . . . 41
Introduction to Proportion . . . 42

Prime Numbers

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, . . .

Each prime number has exactly two factors.

Properties of Solids . . . 43
Nets . . . 44
Angles on a Line and at a Point . . . 45
Measuring and Drawing Angles . . . 46
Drawing a Triangle Using a Protractor . . . 47
Reflections . . . 48
Rotations . . . 49
Translations . . . 50
Plans and Elevations . . . 51
Perimeters . . . 52
Area of a Rectangle . . . 53
Area of a Triangle . . . 54
Area of a Parallelogram . . . 55
Area of a Trapezium . . . 56
Frequency Trees . . . 57
Listing Outcomes . . . 58
Calculating Probabilities . . . 59
Mutually Exclusive Events . . . 60
Two-Way Tables . . . 61
Averages and the Range . . . 62
Data - Discrete and Continuous . . . 63
Vertical Line Charts . . . 64
Frequency Tables and Diagrams . . . 65

Area of a triangle = $\frac{b \times h}{2}$

Area of trapezium = $\frac{1}{2}(a + b)h$

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Grade 3

Multiplying Decimals . . . 66
Dividing Decimals . . . 67
Four Rules of Negatives . . . 68
Listing Strategies . . . 69
Comparing Fractions . . . 70
Adding and Subtracting Fractions . . . 71
Finding a Fraction of an Amount . . . 72
Multiplying Fractions . . . 73
Dividing Fractions . . . 74
BODMAS/BIDMAS . . . 75
Reciprocals . . . 76
Calculator Questions . . . 77
Product of Primes . . . 78
Highest Common Factor (HCF) . . . 79
Lowest Common Multiple (LCM) . . . 80
Squares, Cubes and Roots . . . 81
Working with Indices . . . 82
Standard Form . . . 83
Decimals and Fractions . . . 84
Fractions, Percentages, Decimals . . . 85
Percentage of an Amount (Calc.) . . . 86
Percentage of an Amount (Non-Calc.) . . . 87
Change to a Percentage (Calc.) . . . 88
Change to a Percentage (Non-Calc) . . . 89
Rounding to Significant Figures . . . 90
Estimating Answers . . . 91
Using Place Value . . . 92
Expanding Brackets . . . 93
Simple Factorisation . . . 94
Substitution . . . 95
Straight Line Graphs . . . 96
The Gradient of a Line . . . 97
Drawing Quadratic Graphs . . . 98
Sketching Functions . . . 99
Solving Equations Using Flowcharts . . . 100
Subject of a Formula Using Flowcharts . . . 101
Generate a Sequence from *n*th Term . . . 102
Finding the *n*th Term . . . 103
Special Sequences . . . 104
Exchanging Money . . . 105
Sharing Using Ratio . . . 106
Ratios, Fractions and Graphs . . . 107
Increase/Decrease by a Percentage . . . 108
Percentage Change . . . 109
Reverse Percentage Problems . . . 110
Simple Interest . . . 111
Metric Conversions . . . 112
Problems on Coordinate Axes . . . 113
Surface Area of a Prism . . . 114
Volume of a Cuboid . . . 115
Circle Definitions . . . 116
Area of a Circle . . . 117
Circumference of a Circle . . . 118
Volume of a Prism . . . 119
Angles and Parallel Lines . . . 120
Angles in a Triangle . . . 121
Properties of Special Triangles . . . 122
Angle Sum of Polygons . . . 123
Bearings . . . 124
Experimental Probabilities . . . 125
Possibility Spaces . . . 126
Venn Diagrams . . . 127
Representing Data . . . 128
Scatter Diagrams . . . 129
Averages From a Table . . . 130

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Grade 4

Index Notation . . . 131
Introduction to Bounds . . . 132
Midpoint of a Line on a Graph . . . 133
Expanding and Simplifying Brackets . . . 134
Solving Equations . . . 135
Rearranging Simple Formulae . . . 136
Forming Formulae and Equations . . . 137
Inequalities on a Number Line . . . 138
Solving Linear Inequalities . . . 139
Simultaneous Equations Graphically . . . 140
Fibonacci Sequences . . . 141
Compound Units . . . 142
Distance-Time Graphs . . . 143
Similar Shapes . . . 144
Bisecting an Angle . . . 145
Constructing Perpendiculars . . . 146
Drawing a Triangle Using Compasses . . . 147
Enlargements . . . 148
Tangents, Arcs, Sectors and Segments . . . 149
Pythagoras' Theorem . . . 150
Simple Tree Diagrams . . . 151
Sampling Populations . . . 152
Time Series . . . 153

The Laws of Indices

$x^a \times x^b = x^{a+b}$

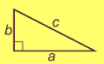
$x^a \div x^b = x^{a-b}$

$(x^a)^b = x^{ab}$

$x^{-a} = \frac{1}{x^a}$

Pythagoras

$a^2 + b^2 = c^2$



Grade 5

Negative Indices . . . 154
Error Intervals . . . 155
Mathematical Reasoning . . . 156
Factorising and Solving Quadratics . . . 157
The Difference of Two Squares . . . 158
Finding the Equation of a Straight Line . . . 159
Roots and Turning Points of Quadratics . . . 160
Cubic and Reciprocal Graphs . . . 161
Simultaneous Equations Algebraically . . . 162
Geometric Progressions . . . 163
Compound Interest and Depreciation . . . 164
Loci . . . 165
Congruent Triangles . . . 166
Sectors of a Circle . . . 167
Trigonometry . . . 168
Spheres . . . 169
Pyramids . . . 170
Cones . . . 171
Frustums . . . 172
Exact Trigonometric Values . . . 173
Introduction to Vectors . . . 174
Harder Tree Diagrams . . . 175
Stratified Sampling . . . 176

Trigonometry

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Grade 6

Recurring Decimals to Fractions . . . 177
Product of Three Binomials . . . 178
Iteration - Trial and Improvement . . . 179
Iterative Processes . . . 180
Enlargement - Negative Scale Factor . . . 181
Combinations of Transformations . . . 182
Circle Theorems . . . 183
Proof of Circle Theorems . . . 184
Probability Using Venn Diagrams . . . 185
Cumulative Frequency . . . 186
Boxplots . . . 187

Grade 7

Fractional Indices . . . 188
Recurring Decimals - Proof . . . 189
Rearranging Difficult Formulae . . . 190
Solving Quadratics with the Formula . . . 191
Factorising Hard Quadratics . . . 192
Algebraic Proof . . . 193
Exponential Functions . . . 194
Trigonometric Graphs . . . 195
Transformation of Functions . . . 196
Equation of a Circle . . . 197
Regions . . . 198
Direct and Inverse Proportion . . . 199
Similarity - Area and Volume . . . 200
The Sine Rule . . . 201
The Cosine Rule . . . 202
Area of a Triangle Using Sine . . . 203
And and Or Probability Questions . . . 204
Histograms . . . 205

Grades 8 and 9

Upper and Lower Bounds . . . 206
Surds . . . 207
Perpendicular Lines . . . 208
Completing the Square . . . 209
Algebraic Fractions . . . 210
Simultaneous Eqns with a Quadratic . . . 211
Solving Quadratic Inequalities . . . 212
Finding the *n*th Term of a Quadratic . . . 213
Inverse Functions . . . 214
Composite Functions . . . 215
Velocity-Time Graphs . . . 216
Pythagoras in 3D . . . 217
Trigonometry in 3D . . . 218
Vectors . . . 219

Fractional Indices

$x^{\frac{a}{b}} = (\sqrt[b]{x})^a$

Surds

$\sqrt{a} \times \sqrt{a} = a$

$\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$

$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

Quadratic Formula

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Sine Rule

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule

$a^2 = b^2 + c^2 - 2bc \cos A$

Histograms

frequency density = $\frac{\text{frequency}}{\text{class width}}$

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MATHSWATCH COVERS EVERY TOPIC ON THE 2015 SYLLABUS

Grades that will be examined:

Higher	1	2	3	4	5	6	7	8	9
Foundation	1	2	3	4	5				

Grades that can be obtained:

Higher				4	5	6	7	8	9
Foundation	1	2	3	4	5				

The Maths Grade 1 to 9 syllabus is split into 5 areas and 240 videos.

Number - 65 videos

Algebra - 64 videos

Ratio and Proportion - 17 videos

Geometry and Measures - 66 videos

Probability and Statistics - 28 videos

How long will it take to revise?

The timings of our videos are:

0 to 5 mins	. . . . 103 videos
5 to 10 mins	. . . . 110 videos
10 to 15 mins	. . . . 22 videos
15 to 20 mins	. . . . 4 videos
20 to 25 mins	. . . . 1 video