

Maths GCSE

(111 days until the first exam)

Understanding the new qualification and assessment

How to revise for Maths exams

Review of resources available

Details of additional help available

Time for questions

Understanding the new qualification and assessment

- In Maths, we are doing the **AQA Higher** GCSE and the **Edexcel Foundation** GCSE
- Higher paper: Grades 3-9
- Foundation paper: Grades 1-5
- Three 90 minute papers; one non-calculator paper, two calculator papers.

New GCSE Grading Structure									
9	8	7	6	5	4	3	2	1	U
				← 4 = C and above		→ C = 4 and above			
A*	A	B	C	D	E	F	G	U	
Current GCSE Grading Structure									

3

- Higher proportion of **non-standard** questions (more on the Higher paper):
- STANDARD

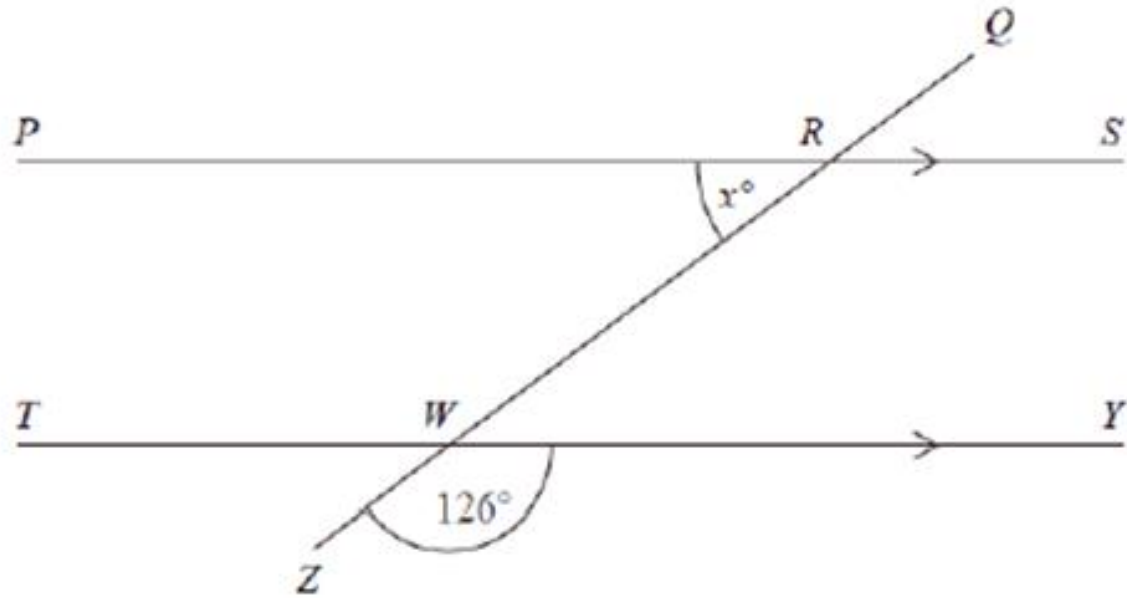


Diagram NOT
accurately drawn

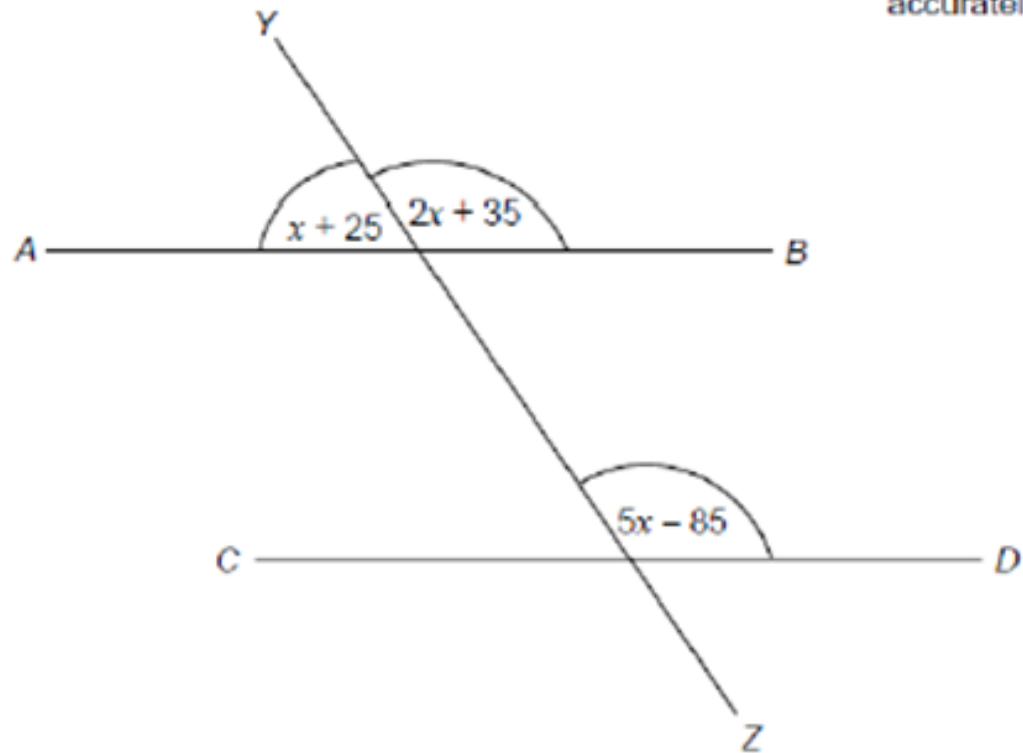
PRS and TWY are parallel straight lines.
 $QRWZ$ is a straight line.

Work out the value of x .
Give reasons for your answer.

- Higher proportion of **non-standard** questions (more on the Higher paper):
- NON – STANDARD:

AB , CD and YZ are straight lines.

All angles are in degrees.



Show that AB is parallel to CD .

How to revise for Maths exams

- **The best way to revise maths is to do maths.**
- Before you start revising, draw up a list of all the topics you need to cover.
- Fill all these gaps using MathsWatch and/or revision guides.
- Practice doing non-standard questions using MathsWatch and exam questions.
- Practice using your **own** calculator.
- Start early and do little bits at a time.

Review of resources available

► We subscribe to:

► <https://www.vle.mathswatch.com>

► Full of videoed lessons and questions on every topic in the new syllabus.

► Every Year 11 student has their own login and password.

► Their username is their first initial and surname “@westfield”

► All passwords are “password”

► Maths teachers also set homework tasks via this website.

► This is easily accessible via computers, phones and tablets.

► It includes revision plans, worksheets and a **list of all topics**.

► We also have “usage” statistics for every student...

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

\oplus becomes + eg. $5 - (-3) = 5 + 3$

\ominus becomes - eg. $5 + (-3) = 5 - 3$

Multiplication/Division

$\oplus \times \oplus$ becomes + eg. $(-5) \times (-3) = 15$

$\oplus \times \ominus$ becomes - eg. $(-5) \times 3 = -15$

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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

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



Prime Numbers

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

Each prime number has exactly two factors.

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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

BOOMAS/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 nth Term 102

Finding the nth 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

Loof 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

Upper and Lower Bounds 206

Surds 207

Perpendicular Lines 208

Completing the Square 209

Algebraic Fractions 210

Simultaneous Eqs with a Quadratic 211

Solving Quadratic Inequalities 212

Finding the nth 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 = $\frac{\text{frequency}}{\text{class width}}$

MathsWatch - Revision lessons just a click away ...

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

Handout....

8

Clip	Title	Topic	Grade	☹	☺	😊
125	Experimental Probabilities	Probability	3			
126	Possibility Spaces	Probability	3			
127a	Venn Diagrams - Introduction	Probability	3			
127b	Venn Diagrams - Notation	Probability	3			
128a	Representing Data - Pie Charts	Probability	3			
128b	Representing Data - Stem and Leaf Diagrams	Probability	3			
129	Scatter Diagrams	Probability	3			
130a	Averages from a table - Basics	Probability	3			
130b	Averages from a table - Estimate for the Mean	Probability	3			
131	Index Notation	Number	4			
132	Introduction to Bounds	Number	4			
133	Midpoint of a Line on a Graph	Algebra	4			
134a	Expanding and Simplifying Brackets - Single Set	Algebra	4			
134b	Expanding and Simplifying Brackets - Double Set	Algebra	4			
135a	Solving Equations - Balancing	Algebra	4			
135b	Solving Equations - Float & Ping	Algebra	4			
136	Rearranging Simple Formulae	Algebra	4			
137	Forming Formulae and Equations	Algebra	4			
138	Inequalities on a Number Line	Algebra	4			
139	Solve Linear Inequalities	Algebra	4			
140	Simultaneous Equations Graphically	Algebra	4			
141	Fibonacci Sequences	Algebra	4			
142	Compound Units	Ratio	4			
143	Distance-Time Graphs	Ratio	4			
144	Similar Shapes	Ratio	4			
145	Bisecting an Angle	Geometry	4			
146a	Constructing Perpendiculars - Bisecting a Line	Geometry	4			
146b	Constructing Perpendiculars - From any Point	Geometry	4			
147	Draw a Triangle Using Compasses	Geometry	4			
148	Enlargements	Geometry	4			
149	Tangents, Arcs, Sectors and Segments	Geometry	4			
150a	Pythagoras' Theorem - A Simple Approach	Geometry	4			
150b	Pythagoras' Theorem - An Algebraic Approach	Geometry	4			
150c	Pythagoras' Theorem - Line on a Graph	Geometry	4			
151	Simple Tree Diagrams	Probability	4			
152	Sampling Populations	Probability	4			
153	Time Series	Probability	4			
154	Negative Indices	Number	5			
155	Error Intervals	Number	5			
156	Mathematical Reasoning	Number	5			

Review of resources available

- ▶ Free online resources:

- ▶ <http://mrbartonmaths.com/students/>

- ▶ Use the **Hints and Tips** page for useful Maths revision and exam techniques. However, go to **GCSE Maths** for an incredibly useful page of free resources; particularly useful are **Topic Revision** and **GCSE Maths Takeaway**.

- ▶ <https://www.mathsgenie.co.uk/>

- ▶ Use the **GCSE revision** section for online **videos, exam style questions and solutions**. The grades for each topic are listed helping you to revise at the appropriate level.

- ▶ <https://corbettmaths.com>

- ▶ Use the **5-a-day** section for five daily GCSE questions at whichever level is appropriate. Use the **Videos** section for a YouTube video and set of exam questions (with answers) on every topic in GCSE Maths.

Review of resources available

Resources available on Parent Pay:

- ▶ We sell revision guides, with exam questions for Higher and Foundation GCSE Maths
 - ▶ Revision guides cost £4
- ▶ We are selling sets of practice papers at Higher and Foundation
 - ▶ £3 for a set of 6 papers (with solutions)

Additional help available

The Maths department is committed to helping students achieve their potential; teachers will gladly give up their time with a little forewarning, so please **ask for help!**

In addition:

- ▶ All Maths staff do extra intervention sessions on Thursday immediately after school
- ▶ There are often other opportunities to do extra Maths work in subjects which are not compulsory or are completed (ask your teachers nicely):
 - ▶ Core P.E.
 - ▶ PSHE
 - ▶ Food Tech.

Time for questions...

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