KS4 Mathematics

Exam Board – AQA* Syllabus – GCSE Mathematics (8300)

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*Note that AQA and Edexcel both cover exactly the same specification and it is possible that we will switch boards once we have had the chance to review the outcomes from the first cohort in 2017

Examination Content



Two tiers:

- Foundation Tier (Grades 1 up to 5)
- Higher Tier (Grades 4 up to 9)
- The final decision on tier of entry will be made in March 2021 based on internal assessments and mock exams

- Examination content is grouped into topic areas of:

- Number
- Algebra
- Ratio and Proportion
- Geometry and Measure
- Probability
- Statistics

Assessment

Internal Assessments:

End of topic tests will take place in class throughout the two years. Year 10 mocks at the end of June 2018 will replicate the final exams and cover all content studied so far. Students should be revising throughout the year to make sure they understand and remember any content covered

External Assessments

Assessed entirely through written examination - No coursework/ controlled assessments

PAPER	ASSESSMENT	DATE	CALCULATOR ALLOWED?
1	One written examination (1 hour 30 minutes)	June 2021	No
2	One written examination (1 hour 30 minutes)	June 2021	YES
3	One written examination (1 hour 30 minutes)	June 2021	YES



GCSE Grades Explained...



Changes to course content...

Skills to be assessed at Foundation that are currently Higher only

- Calculate exactly with multiples of π
- Use standard form
- Round to any number of significant figures (currently 1 s.f. only)
- Expand double brackets
- Factorise quadratics including the difference of two squares
- Solve quadratic equations by factorising
- Know the difference between an equation and identity
- Use y = mx + c to identify parallel lines
- Sketch quadratic, cubic and reciprocal functions
- Derive simultaneous equations from real-life situations
- Solve linear simultaneous equations algebraically and graphically
- Perform calculations with density, mass and volume
- Solve problems involving percentage change and reverse percentages
- Use direct and inverse proportion graphically and algebraically
- Solve problems involving compound interest
- Find corresponding lengths in similar shapes
- Use the congruence criteria for triangles (SSS, SAS, ASA, RHS)
- Enlarge shapes with fractional scale factors
- Find the areas and perimeters of compound shapes involving circles, and calculate arc lengths and areas of sectors
- Use the sin, cos and tan trigonometric ratios for right-angled triangles
- Use tree diagrams to solve probability questions
- Infer properties of a population from a sample, while knowing the limitations of sampling

New Skills to be assessed at foundation and higher

- Find the equation of a line through two points or through one point with given gradient
- Recognise and use sequences of triangular, square and cube numbers, Fibonacci type sequences, quadratic sequences and geometric sequences
- Calculate compound measures including pressure in numerical and algebraic contexts
- Express a multiplicative relationship between two quantities as a ratio or a fraction
- Write a ratio as a linear function
- Set up, solve and interpret growth and decay problems
- Use inequality notation to specify error intervals due to rounding
- Understand the \neq symbol (not equal)
- Use the standard convention for labelling sides and angles of polygons
- Derive the sum of angles in a triangle
- Know the exact values of sin, cos and tan at key angles (0, 30, 45, 60, 90 degrees)
- Use Venn diagrams
- Consider outliers when calculating the range of a distribution
- Know that correlation does not imply causation

Changes to course content...

New Skills to be assessed at higher only

- Recognise and use the equation of a circle centred at the origin *
- Find the equation of a tangent to a circle at a given point, using the fact that it is perpendicular to the radius
- Find approximate solutions using iteration (is this just trial & improvement?)
- Solve quadratic inequalities
- Find the nth term of a quadratic sequence
- Recognise and use geometric sequences where the common ratio may be a surd
- Apply the concepts of instantaneous and average rates of change by looking at the gradients of tangents and chords to a curve
- Prove the circle theorems
- Use the probability "AND" and "OR" rules *
- Change recurring decimals into their corresponding fractions and vice versa *
- Find inverse and composite functions
- Locate turning points of quadratic functions by completing the square *
- Sketch y = tan x (in addition to sin and cos)
- Interpret areas under graphs and gradients of graphs in real-life contexts (e.g. recognise that the area under a velocity-time graph represents displacement)

Many of these topics currently only appear in A-Level Mathematics

Note that both higher and foundation have additional content to be covered In the two years (compared to the current GCSE).

In addition to the extra content, the style of questions are much more about problem solving.

How you can help...

- Look at their books on a regular basis to see what they are doing? Is the quality of work as you would expect from your child? Is it well presented?
- Take an interest in their homework encourage them to do it at home and get them to explain the maths to you to consolidate understanding.
- In addition to completing their homework, students should get into the habit of doing 15 to 20 minutes a day of revision for mathematics. This could take the form of reviewing their classwork from that day; practising extra questions; watching on-line video tutorials; making revision notes at the end of a topic.
- Get them a folder to help them organise their work for keeping all their assessments and revision notes from independent study. This will be invaluable when revising for the final exams.
- If you have any concerns, then contact the class teacher in the first instance.



www.vle.mathswatch.co.uk

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GCSE (WJEC)	List of Clips	
	Formula Sheet	
	Additional Formula Sheet	
	How to Use One-Minute-Maths	
	Circle Theorems Summary	
	Revision Schedules	
	FOUNDATION HIGHER	
	EXCEL 6-week schedule 6-week schedule	
	PDF 6-week schedule 6-week schedule	

...from the extras menu Formulae to memorise...

Formulas You Need to Know for The Foundation and Higher Exams



Circumference of a circle = $2\pi r$

Pythagoras' Theorem

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

Trigonometry



Formulas You Need to Know for The Higher Exam ONLY

Quadratic Formula

x	=	-b	±√	b²	_	4ac
				2	а	

Sine Rule

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

Cosine Rule

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

Area of a Triangle = $\frac{1}{2}ab \sin C$





From the higher/ foundation menus

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Worksheets for independent study – use to check understanding after completing a topic in class or watching revision videos. Bring to your teacher to mark.

MathsWatch





Take me to	0			
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Grade 6	Grade 7	Grade 8	Grade 9	
Grade 3	Foundation	n and Highe	er	
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Don't ignore the lower grade topics – these will cover all your basic skills needed to be successful on the higher topics



Tammy is 12 years old. Danny is 10 years old. Sally, Tammy and Danny share £28 in the ratio of their ages.

How much should Tammy now have?

Tammy gives a third of her share to her mother



Other on-line resources....

www.Corbettmaths.com



Good for 5-a-day (5 questions a day for every day of the year). On-line revision videos (similar to Corbett Maths





Stats Page appears when you log in



Top tips for using HegartyMaths

1) Students MUST always write the Q and their full workings in their book for every single question they do on the site.

2) Students MUST mark all their own work as they go along in their books. If correct, tick. If wrong, cross their answer, write the correct answer and try the question in a green colour pen one more time.

3) It is unacceptable to get 90% or less without watching the video. The content exactly matches the quiz and it is unacceptable for students to say they do not understand if they do not demonstrate they have tried.

4) Praise students for their effort, neatness of notes, writing their workings and marking their work.

5) Aim for each student in your school doing one additional hour a week outside class on HegartyMaths. The schools facilitating this are seeing unbelievable gains.

MATHEMATICS DEPARTMENT HAYDON SCHOOL

MATHEMATICS **TRACKER BOOKLET**



HIGHER YEAR 9 AUTUMN TERM

ACHIEVING INDIVIDUAL EXCELLENCE IN A CARING COMMUNITY



	Basic I	Number, Fractions and Decimals			
Grade	SOW Topic	Hegarty Maths Lessons	RAG		
1 - 3		Arithmetic with positive integers: Skills 1 - 12			
1 - 3	Basic Number	Place value: Skills 13 - 17			
1 - 3		Operations with positive integers: Skills 18 - 24			
1 - 3		Negative numbers: Skills 37 - 44			
1 - 3	Basic Fractions	Fractions: Skills 57 - 74; 77 - 80			
1 - 3	Basic Decimals	Decimals: Skills 45 - 52; 55			
6-9	Recurring Decimals	Decimals: Skills 53 - 54			
Topic Test 1 - Basic number, fractions and decimals (non-calculator)					

Independent Learning Log

HM Quiz Number	Comment - did you use class notes; watch video and take notes?	Quiz %	Retry %	Date

Well presented

Sufficient classwork

Sufficient home learning

ReAct to assessments

Tracker book up to date



ReAct to Topic Tests and Formal Assessments

Topic Te	Topic Test 1 - Basic number, fractions and decimals (non-calculator)				
Score					
WWW					
EBI					
Target					

	Autumn Term Assessment
Score	
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Teacher Comment	
Parent Comment	



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