

Purpose of the session

- To understand the structure and key elements of the new maths specification, including the changes to the content.
 - To start thinking about how to best support your child in their studies
 - To enable you to ask any questions about the maths curriculum
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Underlying Principles of Mathematics at Varndean School

- Mathematics is for everyone
- The new scheme of learning has been developed with lessons and resources that are of genuine help in the classroom, which enable students to engage, enjoy and succeed in maths
- Our aim is to equip students with the appropriate skills, whatever their chosen pathway
- Change to AQA exam board for the new GCSE, first examined June 2017

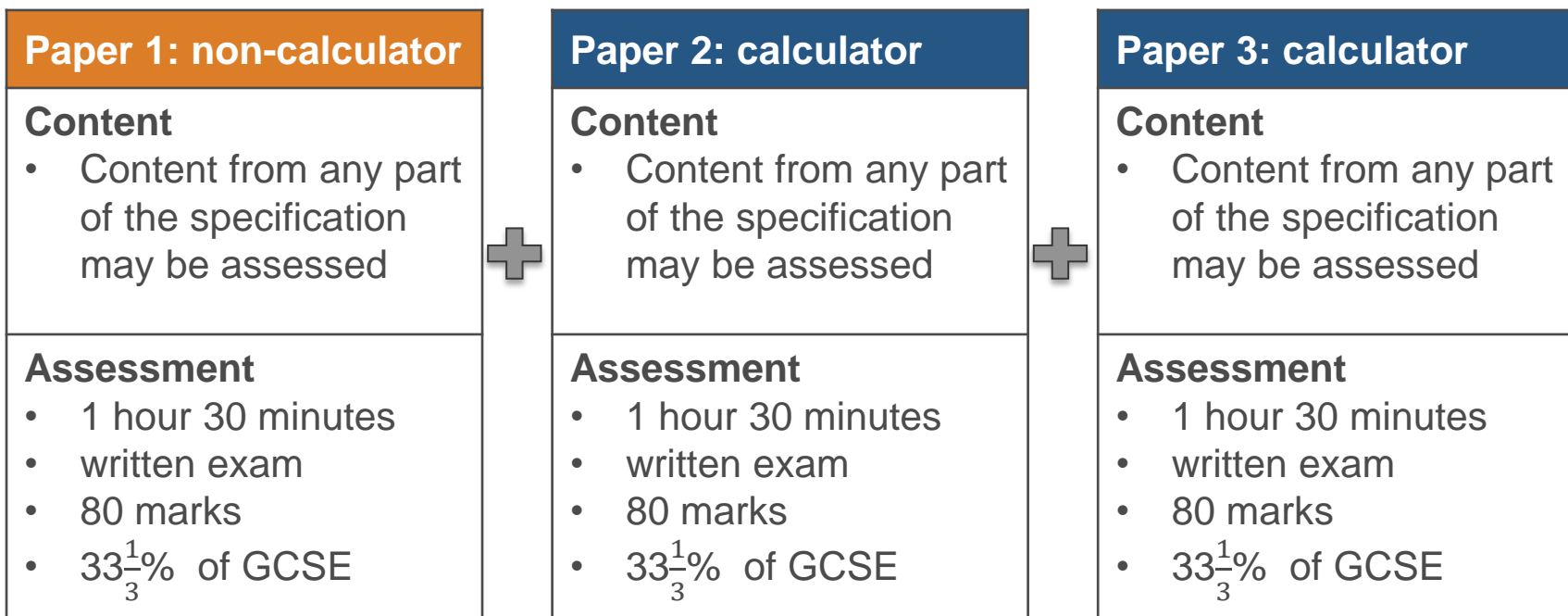
The question papers are accessible, allowing students to demonstrate their knowledge and understanding to achieve the results they deserve

Requirements for all GCSEs in Mathematics

- Written papers only
- Linear assessment – all exams must be taken in the same series
- Foundation and Higher tiers
- New grading structure 1-9, with 9 being the highest

Foundation tier	1 – 5
Higher tier	4 – 9

AQA Specification at a Glance



- Students will be required to answer all questions on all papers
 - The assessment structure will be the same for both foundation and higher tiers
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Key changes from the existing specifications

- Shift in content from the Higher tier to the Foundation;
Mainly in algebra, geometry and measures, as well as in ratio, proportion and rates of change.
 - New content added to both tiers, mainly in ratio, proportion and rates of change
 - Content added to Higher tier, mainly in algebra and geometry and measures
 - Topics omitted from both tiers
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Content to be assessed at Foundation that are currently Higher only

Number	<ul style="list-style-type: none">• Use standard form• Calculate exactly with multiples of π
Algebra	<ul style="list-style-type: none">• 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
Ratio, proportion and rates of change	<ul style="list-style-type: none">• Perform calculations with density, mass and volume• Solve problems involving reverse percentages• Use direct and inverse proportion graphically and algebraically• Solve problems involving compound interest
Geometry and measures	<ul style="list-style-type: none">• 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
Probability	<ul style="list-style-type: none">• Use tree diagrams to solve probability questions
Statistics	<ul style="list-style-type: none">• Infer properties of a population from a sample, while knowing the limitations of sampling

New content to be assessed at Foundation and Higher

Algebra	<ul style="list-style-type: none">• 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
Ratio, proportion and rates of change	<ul style="list-style-type: none">• 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)
Geometry and measures	<ul style="list-style-type: none">• 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)
Probability	<ul style="list-style-type: none">• Use Venn diagrams
Statistics	<ul style="list-style-type: none">• Consider outliers when calculating the range of a distribution• Know that correlation does not imply causation

New content to be assessed at Higher only

Algebra	<ul style="list-style-type: none">• 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• Solve quadratic inequalities• Find the nth term of a quadratic sequence• Recognise and use geometric sequences where the common ratio may be a surd
Geometry and measures	<ul style="list-style-type: none">• 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• 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)
Probability	<ul style="list-style-type: none">• Use the probability “AND” and “OR” rules

Omitted content

Number	<ul style="list-style-type: none">• Change recurring decimals into their corresponding fractions and vice versa
Algebra	<ul style="list-style-type: none">• Solve equations using trial and improvement (no longer in Foundation Tier) Ratio, proportion and rates of change <ul style="list-style-type: none">• Convert between metric and imperial units
Ratio, proportion and rates of change	<ul style="list-style-type: none">• Convert between metric and imperial units
Statistics	<ul style="list-style-type: none">• Design a survey question and identify sources of bias• Draw and interpret frequency polygons and stem and leaf diagrams

Formulae

Some formulae previously given in the front of the exam paper as part of the formulae sheet will no longer be listed. Students will need to memorise them. These are:

- Area of a trapezium
 - Volume of a prism
 - Quadratic formula (Higher Tier)
 - Triangle sine, cosine and area rules (Higher Tier).
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Moodle

- Past assessment papers with mark schemes
 - Revision lists
 - Graded worksheets with mark schemes
 - Key dates for assessments
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Equipment

- All students should bring their own scientific calculator and geometry set to every lesson
 - Students should have their own equipment e.g. pen, ruler, pencil etc...
 - Please see Miss Raven if there are issues with this
 - Maths equipment is available in the school shop (currently located in the maths office)
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Common mistakes made in assessments

- Not reading the question through properly before answering (read through at least twice)
 - Not checking to see if the answer is realistic (use estimation)
 - Not looking to see how many marks are awarded for each question and show enough working out to gain all the marks (clearly set out workings)
 - Not answering the question once the calculations have been done
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Revising is really practising

- Look through model answers for each topic area
 - Learn the formulas e.g. area of a circle, volume...
 - Learn key terminology e.g. expand, factorise, IQR...
 - Past papers
 - Basic numeracy skills
 - Practise, practise, practise...
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Useful websites

- BBC bitesize
 - Hegarty maths
 - Youtube – type in the topic you want to revise
 - Doodle
 - Every maths topic – questions for topics by category and topic
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