



EXAM CHANGES 2022

GCSE Mathematics (Higher)

Exam Board: AQA

SUMMARY OF ADAPTATIONS

- Student will be provided with a formulae sheet which can be used in the exam.
- A list of topics has been published for each paper.

HOW THE SCHOOL IS USING THIS INFORMATION

- Practice and mock exams will be adapted to reflect summer 2022 exams.
- Intervention sessions will focus on the topics for each paper.
- Revision plans that are in student books will be updated.
- Lesson starters are being adapted to reflect that formulae will be given.
- All students will have a copy of the formulae sheet to stick into their Maths book.
- Teaching will focus on the application of mathematics – using the given formulae rather than having to remember the formula itself.
- Students will have a copy of the topic list in their revision work books.
- Revision will be focussed on specific topics for each paper.

WHAT STUDENTS SHOULD DO

- Ensure that they have a copy of the formulae sheet and use it in Mathematics lessons and when revising.
- Use the list of topics for each paper to identify areas of strength and weakness.
- Follow the revision plan – completing each revision homework.
- Revise the areas identified as an area of weakness – but do not neglect revising topics that are a strength. These are where most marks will be picked up.
- Attend Period 6 Maths support after school every Thursday. Teachers will be delivering specific topics focussed on the GCSE exam. They are also willing to support students with any individual queries for other topics.

GCSE MATHEMATICS HIGHER TIER

Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

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

Volume of a prism = area of cross section \times length

Where r is the radius and d is the diameter:

$$\text{Circumference of a circle} = 2\pi r = \pi d$$

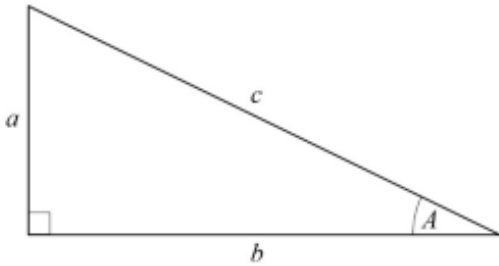
$$\text{Area of a circle} = \pi r^2$$

Quadratic formula

The solution of $ax^2 + bx + c = 0$
where $a \neq 0$

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

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a , b and c are the length of the sides and c is the hypotenuse:

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

In any right-angled triangle ABC where a , b and c are the length of the sides and c is the hypotenuse:

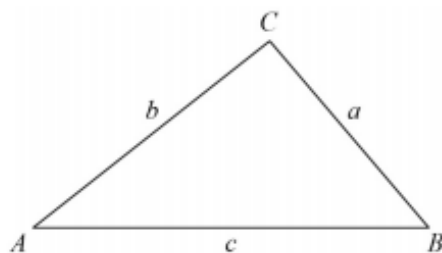
$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$

In any triangle ABC where a , b and c are the length of the sides:

$$\text{sine rule: } \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\text{cosine rule: } a^2 = b^2 + c^2 - 2bc \cos A$$

$$\text{Area of triangle} = \frac{1}{2} ab \sin C$$



Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

$$\text{Total accrued} = P \left(1 + \frac{r}{100} \right)^n$$

Probability

Where $P(A)$ is the probability of outcome A and $P(B)$ is the probability of outcome B :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A \text{ given } B) P(B)$$

MATHEMATICS HIGHER PAPER 1 – TOPIC LIST

Topic	Detail
Number	
Arithmetic	Decimal
Fractions	Arithmetic
	Fraction of a number
	Value as fraction of another
	Recurring decimals as fractions
Percentage	Percentage as operator
Indices	Laws of indices
Standard Form	Conversion
	Calculation
Surds	Simplification
Algebra	
Equations	Of a straight line
	Linear
Manipulation	Identity
	Simplification of algebraic fraction
	Factorisation of quadratic
	Change subject
Graphs	Recognise
	Sketch function
	Speed time
	Inequality region
	Interpret
Sequences	Algebraic
Ratio	
Ratio	Simplest form
	Proportion problem
Geometry & Measures	
Shape	Congruence
	Prism
	Faces
	Exact trigonometric values
Area and Volume	Sector of circle
Vectors	Vector geometry
Constructions	Region
Statistics	
Cumulative frequency	
Probability	
Venn Diagram	
Tree Diagram	
Expected value	
Independent events	

MATHEMATICS HIGHER PAPER 2 – TOPIC LIST

Topic	Detail
Number	
Properties	Prime number
	Cube number
	Reciprocal
	Decimal places
	Bounds
Fractions	Products
Indices	Negative
Algebra	
Equations	Of a circle
	Linear
	Quadratic
	Number line inequality
Manipulation	Factorisation of quadratic
	Multiply out
	Completing the square
Graphs	Coordinate problem
	Perpendicular lines
	Turning point
Functions	Inverse
Sequences	Triangular number
Ratio	
Ratio	Share into a ratio
	On a line
Fraction	To percentage
Conversions	Time
Applications	Equation to percentage
	Rate of output
	Pressure
Percentage	Percentage increase
	Percentage decrease
Geometry & Measures	
Area and Volume	Compound shape
	Cone
	Hemisphere
	Volume scale factor
Shape	Plan
	Pythagoras
Measures	Time
Other	Geometric proof
Statistics	
Estimation from sample	
Pie chart	
Mean	
Probability	
Relative frequency	
Expected value	
Notation	

MATHEMATICS HIGHER PAPER 3 – TOPIC LIST

Topic	Detail
Number	
Properties	Highest common factor
	Lowest common multiple
	Error interval
Decimals	Ordering
	Recurring
Other	Product rule for counting
Algebra	
Equations	Quadratic
	Simultaneous linear/quadratic
Manipulation	Simplification
	Triple bracket
	Factorisation
	Quadratic
Graphs	Roots
	Turning point
	Quadratic
	Exponential
Functions	Composite
Sequences	Arithmetic
	Geometric
	Nth term
Ratio	
Ratio	Share into a ratio
Applications	Average speed
	Population density
Percentage	Percentage increase
	Compound interest
Geometry & Measures	
Area and Volume	Compound shape
	Cylinder
Shape	Quadrilateral
	Circle theorems
	Trigonometry
	Sine/Cosine rule
Vectors	Vector arithmetic
Other	Bearing
Statistics	
Two-way table	
Histogram	
Box plot	
Median, Quartiles	
Interquartile range	
Line of best fit	
Outlier	
Probability	
Independent events	