

Paper 1H – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Fractions	Fraction of an amount
	Fraction arithmetic
	Recurring decimal to fraction
Properties	Product of prime factors
	Negative and fractional indices
Powers and roots	Simplification of surds
Standard Form	Conversion
	Calculation
Algebra	
Manipulation	Simplification
	Expansion of brackets
	Algebraic fractions
Equations and inequalities	Linear inequality
	Form an equation
	Quadratic equation
	Equation of a tangent to a circle
Graphs	Quadratic graph
	Speed-time graph
	Gradients of parallel and perpendicular lines
	Gradient of a curve

Ratio, proportion and rates of change (*see Number – some overlap of topic areas)

Percentages

Percentage of an amount

Ratio

Write as a ratio

Use of ratio

Share in a ratio

Ratio to fraction

Proportion

Equations of proportion

Compound Measures

Density

Geometry and measures

Angles

Angles in a polygon

Length, area and volume

Area of a triangle

Volume of a cube

Surface area of a cuboid

Area of a sector

Pythagoras's Theorem and Trigonometry

Pythagoras's Theorem

Exact trigonometric values

Vectors

Vector geometry

Probability

Probability

Probability

Independent combined events

Statistics

Diagrams

Cumulative frequency graph

Measures

Mean

Inter-quartile range

Paper 2H – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Approximation and estimation	Error interval
Other	Use of a calculator
Algebra	
Manipulation	Simplification
	Expansion of bracket
	Factorisation
	Laws of indices
Equations and inequalities	Linear equation
	Equations of parallel lines
	Form an equation
	Quadratic inequality
Graphs	Coordinates
	Transformations of functions
	Graphs of trigonometric functions
Functions	Inverse and composite functions
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Area
Percentages	Depreciation
Ratio	Use of ratio
Proportion	Direct proportion
	Currency conversion
	Inverse proportion
Compound measures	Pressure

Geometry and measures

Shape

Transformations

Angles

Circle theorems

Length, area and volume

Area of a rectangle

Volume of composite solid

Pythagoras's Theorem and Trigonometry

Sine and Cosine Rules

Probability

Probability

Venn diagram

Probability from a Venn diagram

Statistics

Diagrams

Box plot

Measures

Lower and upper quartiles

Populations

Compare distributions

Capture-recapture method

Paper 3H – grouped by content area

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Negative number
Properties	Laws of indices
Approximation and estimation	Bounds
Other	Product rule for counting
Algebra	
Manipulation	Simplification
	Expansion of bracket
	Substitute values
	Difference of two squares
	Expansion of brackets
	Change subject of a formula
	Forming an expression
	Algebraic fractions
Equations and inequalities	Set up and solve equation
	Simultaneous equations linear/quadratic
Graphs	Gradient of a straight line graph
Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Time
Percentages	Percentage decrease
	Depreciation
	Reverse percentage

Ratio	Write as a ratio
	1 : n form
	Share in a ratio
Proportion	Direct proportion
Compound Measures	Average speed
Growth and decay	General iterative processes
Geometry and measures	
Angles	Circle theorems
Length, area and volume	Area of a trapezium
	Similar triangles
Pythagoras's Theorem and Trigonometry	Pythagoras's Theorem
	Trigonometry
	Trigonometry in 3-D
Vectors	Column vectors
Probability	
Probability	Dependent combined events
Statistics	
Diagrams	Frequency polygon
	Histogram

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:

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

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

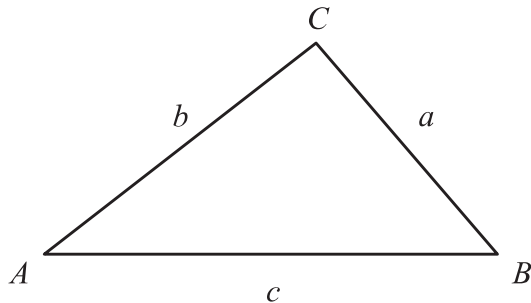
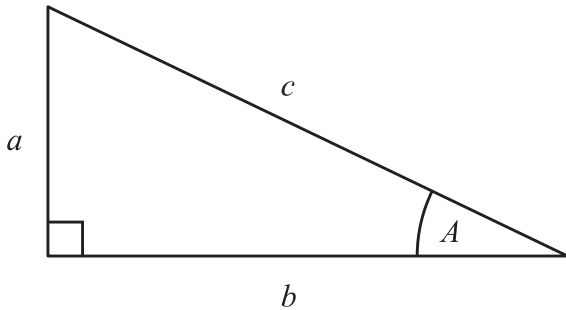
Quadratic formula

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:

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

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

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

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 :

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

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

END OF ADVANCE INFORMATION