

# Curriculum Mapping Guide

# Singapore

Mathematics (2020) Syllabus 4048

Additional Mathematics (2020) Syllabus 4047

## Why Blutick?

Every student deserves to feel confident using mathematics. So we've designed a learning platform that builds confidence and understanding, combining responsive AI with real teacher content.

Blutick engages with students at every line of working, offering personalised feedback and encouragement. It helps teachers understand how their students are performing, giving them the insights they need to focus their time where it's most needed. It's transforming the mathematics classroom for 11-16 year olds and their teachers all over the world.

We believe that Blutick is the future of mathematics learning, and we want to share it with you.

Blutick content is organised into four mathematical areas and each area is then divided into sub-sections:

- ✓ Number (11 sections)
- ✓ Algebra (7 sections)
- ✓ Geometry (13 sections)
- ✓ Statistics and Probability (6 sections)

Each sub-section is also broken down into smaller steps, and each step comes with questions (to three levels), videos, worked examples, questions to complete and a quiz.



## How to use this curriculum mapping guide

We have mapped the Mathematics (2020) Syllabus 4048 and the Additional Mathematics (2020) Syllabus 4047 to the Blutick curriculum.

The Mathematics (2020) Syllabus 4048 is organised into three mathematical areas and this Blutick curriculum map follows this pattern:

- Number and Algebra page 4
- Geometry and Measurement page 9
- Statistics and Probability page 13

The Additional Mathematics (2020) Syllabus 4047 is organised into three mathematical areas and this Blutick curriculum map follows this pattern:

- Algebra page 15
- Geometry and Trigonometry page 17
- Calculus page 19

## Mathematics (2020) Syllabus 4048

71% of the Singapore Y7-Y11 curriculum can be mapped against the Blutick curriculum, either directly or through subject specific links, with a further 15% of components in current development. There is 3% within the Singapore curriculum that have no links in Blutick due to software limitations and 11% where there is no content currently available.

In summary, Blutick offers **86% coverage** (current and planned developments within 6 months) of the Mathematics (2020) Syllabus 4048.



## Additional Mathematics (2020) Syllabus 4047

22% of the Singapore Y7-Y11 curriculum can be mapped against the Blutick curriculum, either directly or through subject specific links, with a further 6% of components in current development. There is 0% within the Singapore curriculum that have no links in Blutick due to software limitations and 72% where there is no content currently available.

It is useful to know that almost a quarter of the Blutick curriculum supports Additional Mathematics (2020) Syllabus 4047. This syllabus is designed to support students for A-Level H2 Mathematics and assumes that students have knowledge of the O-Level Mathematics. Blutick predominantly supports students aged 11-16 years but as this data shows, it also offers support for students aged 16 -18 years too.

### Key

Components that have direct links with Blutick content	bright green
Components that are not yet available but are in development	dark green
Components that do not directly link with Blutick curriculum, but have subject specific links	yellow
Components that have no links, due to software limitations (e.g. gathering of data)	blue
Components that have no current content available	purple

## Number and Algebra

Curriculum Statement	Blutick	Blutick Link
<b>Number and Operations</b>		
• primes and prime factorisation	Direct link	Number: Properties of Integers
• finding highest common factor (HCF) and lowest common multiple (LCM), squares, cubes, square roots and cube roots by prime factorisation	Yes, covered in the form of HCF, LCM, squares and roots	Number: Properties of Integers Number: Powers and Roots
• negative numbers, integers, rational numbers, real numbers, and their four operations	Direct link	Number: Arithmetic Operations
• calculations with calculator	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found throughout the site, incorporated into many topics	
• representation and ordering of numbers on the number line	Direct link	Number: Ordering Numbers
• use of the symbols $<$ , $>$ , $\leq$ , $\geq$	Direct link	Number: Ordering Numbers
• approximation and estimation (including rounding off numbers to a required number of decimal places or significant figures and estimating the results of computation)	Direct link	Number: Rounding and Estimation
• use of standard form $A \times 10^n$ , where $n$ is an integer, and $1 \leq A < 10$	Direct link	Number: Powers and Roots
• positive, negative, zero and fractional indices	Direct link	Number: Powers and Roots
• laws of indices	Direct link	Number: Powers and Roots
<b>Ratio and Proportion</b>		
• ratios involving rational numbers	Direct link	Number: Ratio and Proportion
• writing a ratio in its simplest form	Direct link	Number: Ratio and Proportion
• map scales (distance and area)	Yes, covered in the form of map scales with distances	Geometry: Units & Measurement

• direct and inverse proportion	Direct link	Number: Ratio and Proportion
<b>Percentage</b>		
• expressing one quantity as a percentage of another	Direct link	Number: Percentages
• comparing two quantities by percentage	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Percentages	Number: Percentages
• percentages greater than 100%	Direct link	Number: Percentages
• increasing/decreasing a quantity by a given percentage	Direct link	Number: Percentages
• reverse percentages	Direct link	Number: Percentages
<b>Rate and speed</b>		
• average rate and average speed	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Units & Measurement	Geometry: Units & Measurement
• conversion of units (e.g. km/h to m/s)	Direct link	Geometry: Units & Measurement
<b>Algebraic expressions and formula</b>		
• using letters to represent numbers	Direct link	Algebra: Evaluating Expressions
• interpreting notations	Direct link	Algebra: Evaluating Expressions
• evaluation of algebraic expressions and formulae	Direct link	Algebra: Evaluating Expressions
• translation of simple real-world situations into algebraic expressions	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Evaluating Expressions	Algebra: Evaluating Expressions
• recognising and representing patterns/relationships by finding an algebraic expression for the nth term	Direct link	Number: Functions and Sequences
• addition and subtraction of linear expressions	Direct link	Algebra: Simplifying Expressions
• simplification of linear expressions	Direct link	Algebra: Simplifying Expressions
• use brackets and extract common factors	Direct link	Algebra: Factorising

<ul style="list-style-type: none"> <li>factorisation of linear expressions of the form <math>ax + bx + kay + kby</math></li> </ul>	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Factorising	Algebra: Factorising
<ul style="list-style-type: none"> <li>expansion of the product of algebraic expressions</li> </ul>	Direct link	Algebra: Expanding Brackets
<ul style="list-style-type: none"> <li>changing the subject of a formula</li> </ul>	Direct link	Algebra: Formulae
<ul style="list-style-type: none"> <li>finding the value of an unknown quantity in a given formula</li> </ul>	Direct link	Algebra: Evaluating Expressions
<ul style="list-style-type: none"> <li>use of: <math>(a+b)^2 = a^2 + 2ab + b^2</math></li> </ul>	Direct link	Algebra: Expanding Brackets
<ul style="list-style-type: none"> <li>factorisation of quadratic expressions <math>ax^2 + bx + c</math></li> </ul>	Direct link	Algebra: Factorising
<ul style="list-style-type: none"> <li>multiplication and division of simple algebraic fractions</li> </ul>	Direct link	Algebra: Algebraic Fractions
<ul style="list-style-type: none"> <li>addition and subtraction of algebraic fractions with linear or quadratic denominator</li> </ul>	Direct link	Algebra: Algebraic Fractions
<b>Functions and graphs</b>		
<ul style="list-style-type: none"> <li>Cartesian coordinates in two dimensions</li> </ul>	Currently in development, coming soon	
<ul style="list-style-type: none"> <li>graph of a set of ordered pairs as a representation of a relationship between two variables</li> </ul>	Currently in development, coming soon	
<ul style="list-style-type: none"> <li>linear functions (<math>y = ax + b</math>) and quadratic functions (<math>y = ax^2 + bx + c</math>)</li> </ul>	Direct link	Number: Functions and Sequences
<ul style="list-style-type: none"> <li>graphs of linear functions</li> </ul>	Direct link	Algebra: Using Graphs
<ul style="list-style-type: none"> <li>the gradient of a linear graph as the ratio of the vertical change to the horizontal change (positive and negative gradients)</li> </ul>	Direct link	Algebra: Using Graphs
<ul style="list-style-type: none"> <li>graphs of quadratic functions and their properties:</li> </ul>	Direct link	Algebra: Using Graphs
<ul style="list-style-type: none"> <li>sketching the graphs of quadratic functions</li> </ul>	Direct link	Algebra: Using Graphs
<ul style="list-style-type: none"> <li>graphs of power functions of the form <math>y = ax^n</math>, where <math>n = -2, -1, 0, 1, 2, 3</math>, and simple sums of not more than three of these</li> </ul>	Currently in development, coming soon	
<ul style="list-style-type: none"> <li>graphs of exponential functions <math>y = ka^x</math>, where <math>a</math> is a positive integer</li> </ul>	Currently in development, coming soon	
<ul style="list-style-type: none"> <li>estimation of the gradient of a curve by drawing a tangent</li> </ul>	Direct link	Algebra: Using Graphs

<b>Equations and inequalities</b>		
• solving linear equations in one variable	Direct link	Algebra: Equations & Inequalities
• solving simple fractional equations that can be reduced to linear equations such as: $x/3+(x-2)/4=3$ $3/(x-2)=6$	Direct link	Algebra: Equations & Inequalities
• solving simultaneous linear equations in two variables	Direct link	Algebra: Equations & Inequalities
• solving quadratic equations in one unknown	Direct link	Algebra: Equations & Inequalities
• solving fractional equations that can be reduced to quadratic equations	Currently in development, coming soon	
• formulating equations to solve problems	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Equations & Inequalities	Algebra: Equations & Inequalities
• solving linear inequalities in one variable, and representing the solution on the number line	Direct link	Algebra: Equations & Inequalities
<b>Set language and notation</b>		
Use of set language and the following notation:		
- union of A and B	No content currently available	
- intersection of A and B ' is an element of ' ' is not an element of ' Complement of set A	No content currently available	
- the empty set	No content currently available	
- universal set	No content currently available	
- A is a (proper) subset of B	No content currently available	
- A is not a (proper) subset of B	No content currently available	
• union and intersection of two sets	No content currently available	
• Venn diagrams	Direct link	Stats & Probability: Probability Methods
<b>Matrices</b>		
• display of information in the form of a matrix of any order	No content currently available	
• interpreting the data in a given matrix	No content currently available	
• product of a scalar quantity and a matrix	No content currently available	
• problems involving the calculation of the sum and product (where appropriate) of two matrices	No content currently available	

<b>Problems in real-world contexts</b>		
Solving problems based on real-world contexts:		
- in everyday life (including travel plans, transport schedules, sports and games, recipes, etc.)	Yes, covered in the form of extended ratio	Number: Ratio and Proportion
- involving personal and household finance (including simple and compound interest, taxation, instalments, utilities bills, money exchange, etc.)	Yes, covered in the form of simple and compound interest	Number: Percentages
• interpreting and analysing data from tables and graphs, including distance- time and speed-time graphs	Yes, covered in the form of distance-time and speed-time graphs	Algebra: Using Graphs
• interpreting the solution in the context of the problem	No because of current software limitations, however a great one for teachers to follow up	



## Geometry and Measurement

Curriculum Statement	Blutick	Blutick Link
<b>Angles, triangles and polygons</b>		
• right, acute, obtuse and reflex angles	Currently in development, coming soon	
• vertically opposite angles, angles on a straight line and angles at a point	Direct link	Geometry: Basic Angle Facts
• angles formed by two parallel lines and a transversal: corresponding angles, alternate angles, interior angles	Direct link	Geometry: Basic Angle Facts
• properties of triangles, special quadrilaterals and regular polygons (pentagon, hexagon, octagon and decagon), including symmetry properties	Currently in development, coming soon	
• classifying special quadrilaterals on the basis of their properties	Currently in development, coming soon	
• angle sum of interior and exterior angles of any convex polygon	Direct link	Geometry: Angles in Polygons
• properties of perpendicular bisectors of line segments and angle bisectors	Direct link	Geometry: Geometrical Constructions
• construction of simple geometrical figures from given data (including perpendicular bisectors and angle bisectors) using compasses, ruler, set squares and protractors, where appropriate	Direct link	Geometry: Geometrical Constructions
<b>Congruence and similarity</b>		
• congruent figures and similar figures	Direct link	Geometry: Congruent & Similar Triangles
• properties of similar triangles and polygons:	Direct link	Geometry: Congruent & Similar Triangles
• enlargement and reduction of a plane figure	Direct link	Geometry:
• scale drawings	Direct link	Geometry: Units & Measurement
• determining whether two triangles are $\cong$ congruent $\sim$ similar	Currently in development, coming soon	

• ratio of areas of similar plane figures	Direct link	Geometry: Congruent & Similar Triangles
• ratio of volumes of similar solids	Direct link	Geometry: Congruent & Similar Triangles
• solving simple problems involving similarity and congruence	Direct link	Geometry: Congruent & Similar Triangles
<b>Properties of circles</b>		
• symmetry properties of circles	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Circle Theorems and Properties of Shapes (currently in development)	Geometry: Circle Theorems
• angle properties of circles	Direct link	Geometry: Circle Theorems
<b>Pythagoras' theorem and trigonometry</b>		
• use of Pythagoras' theorem	Direct link	Geometry: Pythagoras & Trigonometry
• determining whether a triangle is right-angled given the lengths of three sides	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Pythagoras & Trigonometry	Geometry: Pythagoras & Trigonometry
• use of trigonometric ratios (sine, cosine and tangent) of acute angles to calculate unknown sides and angles in right-angled triangles	Direct link	Geometry: Pythagoras & Trigonometry
• extending sine and cosine to obtuse angles	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Pythagoras & Trigonometry	Geometry: Pythagoras & Trigonometry
• use of the formula $\frac{1}{2}ab\sin C$ for the area of a triangle	Direct link	Geometry: Further Trigonometry
• use of sine rule and cosine rule for any triangle	Direct link	Geometry: Further Trigonometry
• problems in two and three dimensions including those involving angles of elevation and depression and bearings	Currently in development, coming soon	
<b>Mensuration</b>		
• area of parallelogram and trapezium	Direct link	Geometry: Perimeter & Area

• problems involving perimeter and area of composite plane figures	Direct link	Geometry: Perimeter & Area
• volume and surface area of cube, cuboid, prism, cylinder, pyramid, cone and sphere	Direct link	Geometry: Volume & Surface Area
• conversion between $\text{cm}^2$ and $\text{m}^2$ , and between $\text{cm}^3$ and $\text{m}^3$	Direct link	Geometry: Units & Measurements
• problems involving volume and surface area of composite solids	Yes, in the form of volume of composite solids	Geometry: Volume & Surface Area
• arc length, sector area and area of a segment of a circle	Direct link	Geometry: Perimeter & Area
• use of radian measure of angle (including conversion between radians and degrees)	No content currently available	
<b>Coordinate geometry</b>		
• finding the gradient of a straight line given the coordinates of two points on it	Direct link	Algebra: Using Graphs
• finding the length of a line segment given the coordinates of its end points	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our sections on Using Graphs and Pythagoras & Trigonometry	Algebra: Using Graphs Geometry: Pythagoras & Trigonometry
• interpreting and finding the equation of a straight line graph in the form $y = mx + c$	Direct link	Algebra: Using Graphs
• geometric problems involving the use of coordinates	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our sections on Using Graphs (currently in development) and Perimeter & Area	Geometry: Perimeter & Area
<b>Vectors in two dimensions</b>		
• use of notations: $(x\ y)$ , $AB$ , $\mathbf{a}$ , $ AB $ and $ \mathbf{a} $	Direct link	Geometry: Vectors
• representing a vector as a directed line segment	Direct link	Geometry: Vectors
• translation by a vector	Direct link	Geometry: Vectors
• position vectors	Direct link	Geometry: Vectors
• magnitude of a vector $(x\ y)$ as $\sqrt{x^2 + y^2}$	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Pythagoras & Trigonometry	Geometry: Pythagoras & Trigonometry
• use of sum and difference of two vectors to express given vectors in terms of two coplanar vectors	Direct link	Geometry: Vectors

• multiplication of a vector by a scalar	Direct link	Geometry: Vectors
• geometric problems involving the use of vectors	Currently in development, coming soon	
<b>Problems in real-world contexts</b>		
• solving problems in real-world contexts (including floor plans, surveying, navigation, etc.) using geometry	No content currently available	
• interpreting the solution in the context of the problem	No because of current software limitations, however a great one for teachers to follow up	

## Statistics and Probability

Curriculum Statement	Blutick	Blutick Link
<b>Data analysis</b>		
Analysis and interpretation of:		
- tables	Direct link	Stats & Probability: Statistical Charts Stats & Probability: Statistical Calculations
- bar graphs	Direct link	Stats & Probability: Statistical Charts
- pictograms	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Statistical Charts	Stats & Probability: Statistical Charts
- line graphs	Direct link	Stats & Probability: Statistical Charts
- pie charts	Direct link	Stats & Probability: Statistical Charts
- dot diagrams	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Statistical Charts	Stats & Probability: Statistical Charts
- histograms with equal class intervals	Currently in development, coming soon	
- stem-and-leaf diagrams	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our sections on Statistical Charts and Statistical Calculations	Stats & Probability: Statistical Charts Stats & Probability: Statistical Calculations
- cumulative frequency diagrams	Direct link	Stats & Probability: Statistical Charts Stats & Probability: Statistical Calculations
- box-and-whisker plots	Currently in development, coming soon	
• purposes and uses, advantages and disadvantages of the different forms of statistical representations	No because of current software limitations, however a great one for teachers to follow up	
• explaining why a given statistical diagram leads to misinterpretation of data	No because of current software limitations, however a great one for teachers to follow up	
• mean, mode and median as measures of central tendency for a set of data	Direct link	Stats & Probability: Statistical Calculations

• purposes and use of mean, mode and median	No because of current software limitations, however a great one for teachers to follow up	
• calculation of the mean for grouped data	Direct link	Stats & Probability: Statistical Calculations
• quartiles and percentiles	Yes, covered in the form of quartiles	Stats & Probability: Statistical Calculations
• range, interquartile range and standard deviation as measures of spread for a set of data	Yes, covered in the form of range and interquartile range	Stats & Probability: Statistical Calculations
• calculation of the standard deviation for a set of data (grouped and ungrouped)	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Statistical Calculations	Stats & Probability: Statistical Calculations
• using the mean and standard deviation to compare two sets of data	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Statistical Calculations	Stats & Probability: Statistical Calculations
<b>Probability</b>		
• probability as a measure of chance	Direct link	Stats & Probability: Introduction to Probability
• probability of single events (including listing all the possible outcomes in a simple chance situation to calculate the probability)	Direct link	Stats & Probability: Introduction to Probability Stats & Probability: Sample Spaces
• probability of simple combined events (including using possibility diagrams and tree diagrams, where appropriate)	Direct link	Stats & Probability: Sample Spaces Stats & Probability: Probability Methods
• addition and multiplication of probabilities (mutually exclusive events and independent events)	Direct link	Stats & Probability: Rules of Probability

## Algebra

Curriculum Statement	Blutick	Blutick Link
<b>Equations and inequalities</b>		
• Conditions for a quadratic equation to have: (i) two real roots (ii) two equal roots (iii) no real roots	Direct link	Algebra: Equations and Inequalities
• and related conditions for a given line to: (i) intersect a given curve (ii) be a tangent to a given curve (iii) not intersect a given curve	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Equations and Inequalities	Algebra: Equations and Inequalities
• Conditions for $ax^2 + bx + c$ to be always positive (or always negative)	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Equations and Inequalities	Algebra: Equations and Inequalities
• Solving simultaneous equations in two variables with at least one linear equation, by substitution	Direct link	Algebra: Equations and Inequalities
• Relationships between the roots and coefficients of a quadratic equation	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Equations and Inequalities	Algebra: Equations and Inequalities
• Solving quadratic inequalities, and representing the solution on the number line	Currently in development, coming soon	
<b>Indices and surds</b>		
• Four operations on indices and surds, including rationalising the denominator	Direct link	Algebra: Simplifying Expressions Number: Surds
• Solving equations involving indices and surds	Currently in development, coming soon	
<b>Polynomials and partial fractions</b>		
• Multiplication and division of polynomials	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our sections on Expanding Brackets and Simplifying Expressions	Algebra: Expanding Brackets Algebra: Simplifying Expressions
• Use of remainder and factor theorems	No content currently available	
• Factorisation of polynomials	Yes, in the form of factorising quadratics	Algebra: Factorising
Use of:		
– $a^3 + b^3 = (a+b)(a^2 - ab + b^2)$	No content currently available	

- $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$	No content currently available	
• Solving cubic equations	No content currently available	
Partial fractions with cases where the denominator is no more complicated than:		
- $(ax+b)(cx+d)$	No content currently available	
- $(ax + b)(cx + d)^2$	No content currently available	
- $(ax + b)(x^2 + c^2)$	No content currently available	
<b>Binomial expansions</b>		
• Use of the Binomial Theorem for positive integer n	No content currently available	
• Use of the notations n! and $\binom{n}{r}$	No content currently available	
• Use of the general term $\binom{n}{r} a^{n-r} b^r$ , $0 < r \leq n$ (knowledge of the greatest term and properties of the coefficients is not required)	No content currently available	
<b>Power, exponential, logarithmic and modulus functions</b>		
• Power functions $y = ax^n$ where n is a simple rational number, and their graphs	Currently in development, coming soon	
Exponential and logarithmic functions $a^x$ , $e^x$ , $\log_a(x)$ , $\ln x$ and their graphs, including:		
- laws of logarithms	No content currently available	
- equivalence of $y = a^x$ and $x = \log_a(y)$	No content currently available	
- change of base of logarithms	No content currently available	
• Modulus functions $ x $ and $ f(x) $ where f(x) is linear, quadratic or trigonometric, and their graphs	No content currently available	
• Solving simple equations involving exponential, logarithmic and modulus functions	No content currently available	



## Geometry and Trigonometry

Curriculum Statement	Blutick	Blutick Link
<b>Trigonometric functions, identities and equations</b>		
• Six trigonometric functions for angles of any magnitude (in degrees or radians)	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Pythagoras & Trigonometry and Further Trigonometry	Geometry: Pythagoras & Trigonometry Geometry: Further Trigonometry
• Principal values of $\sin^{-1} x$ , $\cos^{-1} x$ , $\tan^{-1} x$	No content currently available	
• Exact values of the trigonometric functions for special angles	Direct link	Geometry: Pythagoras & Trigonometry
• Amplitude, periodicity and symmetries related to the sine and cosine functions	No content currently available	
Graphs of $y=a \sin(bx)+c$ , $y=a \sin (x/b)+c$ , $y=a \cos(bx)+c$ , $y= a \cos (x/b)+c$ and $y=a \tan(bx)$ , where $a$ is real, $b$ is a positive integer and $c$ is an integer	No content currently available	
• Use of the following $\sin A / \cos A = \tan A$ , $\cos A / \sin A = \cot A$ , $\sin^2(A)+\cos^2(A)=1$ , $\sec^2(A)=1+\tan^2(A)$ , $\operatorname{cosec}^2(A)=1+\cot^2(A)$	No content currently available	
– the expansions of $\sin(A \pm B)$ , $\cos(A \pm B)$ and $\tan(A \pm B)$	No content currently available	
– the formulae for $\sin 2A$ , $\cos 2A$ and $\tan 2A$	No content currently available	
– the expression for $a \cos \theta + b \sin \theta$ in the form $R \cos(\theta \pm \alpha)$ or $R \sin (\theta \pm \alpha)$	No content currently available	
• Simplification of trigonometric expressions	No content currently available	
• Solution of simple trigonometric equations in a given interval (excluding general solution)	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Pythagoras & Trigonometry and Further Trigonometry	Geometry: Pythagoras & Trigonometry Geometry: Further Trigonometry
• Proofs of simple trigonometric identities	No content currently available	
<b>Coordinate geometry in two dimensions</b>		
• Condition for two lines to be parallel or perpendicular	Direct link	Algebra: Using Graphs
• Midpoint of line segment	No content currently available	

• Area of rectilinear figure	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Perimeter & Area	Geometry: Perimeter & Area
• Graphs of parabolas with equations in the form $y^2 = kx$	No content currently available	
• Coordinate geometry of circles in the form: – $(x-a)^2 + (y-b)^2 = r^2$	No content currently available	
– $x^2 + y^2 + 2gx + 2fy + c = 0$ (excluding problems involving 2 circles)	No content currently available	
• Transformation of given relationships, including $y = ax^n$ and $y = kb^x$ , to linear form to determine the unknown constants from a straight line graph	No content currently available	
<b>Proofs in plane geometry</b>		
Use of:		
– properties of parallel lines cut by a transversal, perpendicular and angle bisectors, triangles, special quadrilaterals and circles	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Basic Angle Facts, Geometrical Constructions and Properties of Shapes (currently in development)	Geometry: Basic Angle Facts Geometry: Geometrical Constructions
– congruent and similar triangles	Blutick does not have a specific question to match this statement, however, links to this mathematical area can be found in our section on Congruent & Similar Triangles	Geometry: Congruent & Similar Triangles
– midpoint theorem	No content currently available	
– tangent-chord theorem (alternate segment theorem)	Direct link	Geometry: Circle Theorems

## Calculus

Curriculum Statement	Blutick	Blutick Link
<b>Differentiation and integration</b>		
• Derivative of $f(x)$ as the gradient of the tangent to the graph of $y = f(x)$ at a point	No content currently available	
• Derivative as rate of change	No content currently available	
• Use of standard notations e.g. $f'(x)$ , $f''(x)$	No content currently available	
• Derivatives of $x^n$ , for any rational $n$ , $\sin x$ , $\cos x$ , $\tan x$ , $e^x$ , and $\ln x$ , together with constant multiples, sums and differences	No content currently available	
• Derivatives of products and quotients of functions	No content currently available	
• Derivatives of composite functions	No content currently available	
• Increasing and decreasing functions	No content currently available	
• Stationary points (maximum and minimum turning points and stationary points of inflexion)	No content currently available	
• Use of second derivative test to discriminate between maxima and minima	No content currently available	
• Applying differentiation to gradients, tangents and normals, connected rates of change and maxima and minima problems	No content currently available	
• Integration as the reverse of differentiation	No content currently available	
• Integration of $x^n$ , for any rational $n$ , $\sin x$ , $\cos x$ , $\sec^2(x)$ and $e^x$ , together with constant multiples, sums and differences	No content currently available	
• Integration of $(ax + b)^n$ , for any rational $n$ , $\sin(ax + b)$ , $\cos(ax + b)$ , and $e^{(ax+b)}$	No content currently available	
• Definite integral as area under a curve	No content currently available	
• Evaluation of definite integrals	No content currently available	
• Finding the area of a region bounded by a curve and line(s) (excluding area of region between two curves)	No content currently available	
• Finding areas of regions below the x-axis	No content currently available	
• Application of differentiation and integration to problems involving displacement, velocity and acceleration of a particle moving in a straight line	No content currently available	

## Try Blutick today



[blutick.com](https://blutick.com)

## Contact us



[info@blutick.com](mailto:info@blutick.com)



+44 330 043 1213

