ALGEBRA

HIGHER

Sub-topic	Grade
Algebraic notation	4
Substitute positive and negative values into an expression	2-3
Multiply and divide algebraic terms	4
Expand a single bracket	3
Expand 2 single brackets and collect like terms	4
Expand double brackets	4-6
Expand three brackets	5-6
Expand using identities	7-8
Factorise an expression into a single bracket	3-4
Factorise quadratics $x^2 + bx + c$	5
Factorise quadratics $ax^2 + bx + c$	6-7
Difference of two squares	6-8
Rearrange a formula with one variable (change the subject)	4-5
Rearrange a more complex formula (change the subject)	5-7
Solve multi-step equations	4-5
Solve equations that involve brackets	4
Solve equations with unknowns on both sides	4-6
Solve equations which involve fractions	4-6
Algebraic proof using equations	7-9
Form expressions given a written statement	3-4
Represent inequalities on a number line	3
Identify integers that will satisfy an inequality	3
Solve inequalities	3-5
Continue a linear or a geometric sequence by finding the next term	1-2
Understand Fibonacci style sequences	4
Find the nth term of a linear sequence	3-4
Use the nth term to identify other terms in the sequence	4
Identify the nth term of a quadratic sequence	6-7
Identify the nth term of a geometric sequence	8-9
Recognise the equation of a straight-line $y = mx + c$	3
Complete a table for a linear graph	3-4
Plot a linear graph in the form $y = 5$ or $x = -2$ or $y = 2x - 1$	4

Sub-topic	Grade
Identify the gradient and the y-intercept of a straight line	3-4
Write down the equation of a line if given a visual of the line	4-5
Identify parallel and perpendicular lines given their equations	6-7
Complete a table and plot coordinates for a quadratic or cubic graph	4-5
Identify and draw reciprocal and exponential graphs	4-6
Identify the roots and turning point of a quadratic graph visually	4-5
Solve by factorising	6
Completing the square	7-9
Use the quadratic formula	7-8
Sketching a graph	7-8
Solve simultaneous equations graphically	3
Solve simultaneous equations by elimination	5-6
Solve simultaneous equations by substitution	6-7
Solve linear and quadratic simultaneous equations	8-9
Function notation	6
Composite functions	7
Inverse functions	7-8
Solving functions	7-9
Simplify algebraic fractions	5-7
Multiply and divide algebraic fractions	6-8
Solving equations with algebraic fractions	7-9
Rearrange a fomular for iteration	7
Perform iteration	7-8
Show convergence	8
Algebraic proof	8-9
Equations of a circle	7-8
Sketch the sine, cosine and tangent graphs	8
Identify transformations of graphs	7-8
Sketch a graph after it's been transformed	7-8

G.C.S.E MATHS

MATHS TEACHER HUB

NUMBER

HIGHER

Sub-topic	Grade
Calculate with negative numbers +-×÷ (inc squaring a negative number)	3-4
Multiply and divide integers and decimals	1-3
Calculator skills	4
Identify factors and multiples of a given value	3-4
Identify square and cube numbers and their corresponding root values	3-4
Identify prime numbers	3-4
Prime factor decomposition into index notation	3-4
Highest common factor and lowest common multiple	3-5
Simplify fractions	3-4
Convert between improper fractions and mixed numbers	3-4
Add, subtract, multiply and divide fractions with same and different denominators	3-4
Add, subtract, multiply and divide mixed number fractions	4-5
Find a fraction of an amount	3-4
Write fractions as parts of a ratio	3-4
Reverse fraction problems	6-7
Recurring decimals	7-8
Laws of indices $e^4 \times e^6 = e^{10}$ $m^9 \div m^3 = m^6$ $(t^4)^5 = t^{20}$	3-5
Understand that anything to the power zero equals 1 $h^0 = 1$	4
Laws of indices $5a^3 \times 2a^8 = 10a^{11}$ $10x^8 \div 2x^2 = 5x^6$ $(3n^9)^2 = 9n^{18}$	5-6
Calculate with negative indices	7
Calculate with fractional indices	7-9

Sub-topic	Grade
Find a percentage of an amount	2-4
Percentage increase and decrease problems	3-5
Reverse percentage problems to find an original amount	4-5
Workout a percentage change if given the start and end value	4-5
Calculate simple interest problems	3-5
Calculate compound interest problems	3-5
Calculate values that appreciate or depreciate after a given time	4-5
Round the the nearest integer, 10, 100, 1000	2-3
Round to a given number of decimal places	2-4
Round to a given number of significant figures	3-5
Estimate calculations by rounding	3-4
Identify upper and lower bounds of a value	4-5
Read and write error intervals	4-6
Bounds calculations	7-9
Convert between ordinary numbers and standard form	3-4
Compare and order standard from numbers	4
Calculations with standard from numbers	6-7
Problem solving using standard form	7-8
Value for money (best buys)	4-5
Wages and overtime calculations	4-6
Simplify surds	7
Add, subtract and multiply surds	8
Rationalise the denominator	7-9
Problem solving involving surds	8-9

G.C.S.E MATHS

MATHS TEACHER HUB

GEOMETRY

HIGHER

Sub-topic	Grade
Workout angles on a straight line and around a point	2-3
Workout angles in a triangle and a quadrilateral	2-4
Workout angles in polygons (interior and exterior)	4-5
Workout angles in parallel lines and give reasons	4-6
Multi-step angle proofs	6-8
Algebraic angle problems	5-7
Workout perimeter of squares, rectangles, triangles and compound shapes	1-4
Workout areas of squares, rectangles, parallelograms and triangles	2-4
Work out the area of compound shapes and trapeziums	4-5
Reverse area problems	7
Work out the area and circumference of a circle (inc in terms of pi)	3-5
Work out the area of a sector	6-7
Work out the length of an arc	6-7
Workout the area of a segment	8-9
Workout the volume of a cube, cuboid and other prisms	3-5
Workout the surface area of a cube, cuboid and triangular prisms	4-5
Convert between metric units for length, weight and capacity	2-4
Convert between metric units for area and volume	3-4
Identify congruent and similar shapes	6-8
Calculate with area and volume scale factors	7-8
Transformations (Translation, reflection, rotation)	2-5
Enlarge a shape from a given point	4-5
Enlarge a shape when given a negative of fractional scale factor	7-8

Sub-topic	Grade
Describe combined transformations	6
Workout the volume and surface area of cylinders	5-6
Workout the volume and surface area of cones , spheres pyramids and frustums	8-9
Reverse volume questions	7-9
Draw and measure 3 figure bearings	5
Work with bearings and trigonometry	7-8
Construct accurate drawings of triangles	5
Use a compass bisect and angle, and perpendicular bisect a line	5
Basic loci problems using a compass	5
Identify a region defined by loci	6-7
Pythagoras' theorem to find a missing side	4-5
Pythagoras in 3D shapes	6-8
Trigonometry to find a missing side or and angle	4-5
Angles of elevation and depression	6-7
Exact trig values	8
Sine and cosine rule	7-8
Find the area of a non-right-angled triangle	8
Vector geometry	6-8
Vector proofs (with ratios)	8-9
Circle theorems	7-9
Similarity and congruence (SSS,SAS,ASA,RHS)	6-8
Similar solids	8
Scale factor reasoning	7-9

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DATA

Sub-topic	Grade
Identify different types of data (primary, secondary, discrete, continuous, qualitative and quantitative)	3-4
Sampling methods – Random, systematic and stratified	4
Identify a biased question and how to correct it	3
Critiquing statistical investigations	6-7
Identify and draw a frequency polygon	3
Interpret a pie chart	3
Draw a pie chart	3-5
Identify an average from a list (mode, median, range or mean)	3-4
Choose the most suitable average	4-6
Identify a median from a table	3
Identify the mean from a table	3-4
Estimate the mean from a grouped frequency table	4-5
Reverse mean calculations	5
Compare distributions using averages	5-6
Read and draw a stem and leaf diagram	2-3
Identify the mode, median and the range from a stem and leaf diagram	3-4
Identify the correlation on a scatter graph	3
Draw a line of best fit on a scatter graph	3-4
Use a line of best fit to estimate a value on a scatter graph	4
Relative frequency	4

HIGHER

Sub-topic	Grade
Identify which experiment is more accurate	4
Calculate the probability of a single event	2-3
Calculate the probability of multiple outcomes	4
Calculate the probability of mutually exclusive events	4-5
Read and construct a sample space diagram	3-4
Read and construct a two-way table	3-4
Systematic listing	3
Complete a frequency tree and identify probabilities	3-4
Complete a probability tree with dependant and independent events	5-6
Conditional probability from a tree diagram	8
Complete probability trees without replacement	7
Complete a probability table involving ratios	3-4
Read and construct a Venn diagram	3-5
Calculate probabilities from a Venn diagram (inc $A \cup B$ and $A \cap B$ and A')	4-6
Compare theoretical and experimental probabilities	5-6
Interpret and construct a histogram	6-8
Construct a cumulative frequency table and graph	6
Identify the median and the inter-quartile range from a cumulative frequency graph	6-7
Draw and interpret a box plot	6
Compare distributions using box plots	7

GCSE MATHS

MATHS TEACHER HUB

RATIO

HIGHER

Sub-topic	Grade
Simplify ratios	3
Simplify a ratio to the form $n:1$	3
Write a ratio as fractions	2-3
Share an amount in a given ratio	3-4
Reverse ratio problems	5-7
Compare two ratios	4
Combine two ratios	5-6
Ratio with algebraic terms	6-7
Multi-step ratio problems	7-8
Understand direct and inverse proportion	4-6
Solve problems involving direct and inverse proportion (inc powers)	5-7
Identify graphs of proportion	6-7
Solve questions that involve direct and inverse proportion	5
Read and use map scales	3-4
Interpret scale drawings	4-5
Identify length, area and volume scale factors	5-8
Similar triangles	6-7
Similar solids	7-9
Scale up and down recipes	3-4
Calculate recipes for different number of people	4
Use a recipe and ingredients you have to calculate how many you can make	5

Sub-topic	Grade
Compound measures – Speed, distance and time	4-6
Compound measures – Density, mass and volume	4-6
Compound measures – Pressure, force and area	4-6
Interpret rates of change	6
Real-life graphs	5-6
Gradient as a rate of change	7-8
Read and use conversion graphs	3-4
Convert between currencies using exchange rates	4-5
Read and interpret distance-time graphs	2-3
Calculate average speed from a distance-time graph	4-5
Ratio in geometric contexts	7-8
Mixed proportional reasoning	8-9

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