ALGEBRA

FOUNDATION

Sub-topic	Grade
Use function machines to find outputs and inputs	1-2
Collect like terms (including powers)	1-2
Write simple algebraic expressions	1-2
Identify a term, expression, equation, formula, identity and inequality	1-2
Substitute positive and negative values into an expression	2-3
Multiply and divide terms	2-3
Expand a single bracket	3
Expand 2 single brackets and collect like terms	4
Expand double brackets	4-5
Factorise an expression into a single bracket	3-4
Factorise an expression into a double bracket	4-5
Use a formula	3
Rearrange a formula (change the subject)	4-5
Solve one-step equations	2-3
Solve two-step equations	3-4
Solve equations that involve brackets	4
Solve equations with unknowns on both sides	4-5
Solve equations which involve fractions	4-5
Form expressions given a written statement	3-4

Sub-topic	Grade
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
Find the nth term of a linear sequence	3-4
Use the nth term to identify other terms in the sequence	4
Understand Fibonacci style sequences	4
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
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
Complete a table and plot coordinates for a quadratic or cubic graph	4-5
Identify the roots and turning point of a quadratic graph	4-5
Use function machines to find outputs and inputs	3
Solve simultaneous equations graphically	3
Solve simultaneous equations	5

G.C.S.E MATHS

MATHS TEACHER HUB

NUMBER

FOUNDATION

Sub-topic	Grade
Place value from hundredths to billions	1-3
Order positive and negative integers	1-2
Calculate with negative numbers +-×÷ (inc squaring a negative number)	2-4
Multiply and divide integers and decimals	1-3
BIDMAS (order of operations)	1-3
Calculator skills	2-4
Identify factors and multiples of a given value	2-3
Identify square and cube numbers and their corresponding root values	2-3
Identify prime numbers	2-4
Prime factor decomposition into index notation	3-4
Highest common factor and lowest common multiple	3-5
Identify and create equivalent fractions	2-3
Simplify fractions	2-4
Convert between improper fractions and mixed numbers	2-4
Order and compare fractions	2-3
Add, subtract, multiply and divide fractions with same and different denominators	2-4
Add, subtract, multiply and divide mixed number fractions	4-5
Find a fraction of an amount	2-4
Write fractions as parts of a ratio	3-4
Convert between fraction, decimal and percentages	3-4

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	4-5
Convert between ordinary numbers and standard form	3-4
Compare and order standard from numbers	4
Calculations with standard from numbers	4-5
Money calculations	2-3
Value for money (best buys)	4-5
Calculate wages and overtime	4-5
Time calculations (12-hour and 24-hour clock)	2-4
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
Exchange rates	5

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GEOMETRY

FOUNDATION

Topic	Grade
Identify angles	1-2
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	3-5
Identify 2D shape names and properties	1-4
Identify lines of symmetry (and rotational symmetry)	1-3
Identify properties of 3D shapes	2-3
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
Identify parts of a circle	2-3
Workout the circumference of a full, half and a quarter circle (inc in terms of pi)	3-5
Workout the area of a full, half and a quarter circle (inc in terms of pi)	3-5
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

Topic	Grade
Transformations (Translation, reflection, rotation)	2-5
Enlarge a shape from a given point	4-5
Describe combined transformations	5
Plot and read coordinates in all 4 quadrants	2-3
Find missing coordinates	3-5
Calculate a midpoint from a line or two given points	5
Calculate a point when given a ratio of other points	5
Identify congruent and similar shapes	4-5
Workout missing lengths of similar shapes	4-5
Draw and measure 3 figure bearings	5
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
Pythagoras' theorem to find a missing side	4-5
Trigonometry to find a missing side or and angle	4-5
Workout the volume and surface area of a cylinder	5
Identify and draw basic vectors	5
Vector addition	5

GCSE MATHS

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DATA

Sub-topic	Grade
Identify different types of data (primary, secondary)	1-2
Design a questionnaire	3
Identify a biased question and how to correct it	2-3
Read tables and charts	1-2
Draw a bar chart	2-3
Draw a dual or composite bar chart	3-4
Read and draw a pictogram	1-3
Understand line and time series graphs	3
Interpret a pie chart	3
Draw a pie chart	3-4
Identify an average from a list (mode, median, range or mean)	2-4
Choose the most suitable average	4-5
Identify a median or modal group from a table	2-3
Identify the mean from a table	3-4
Estimate the mean from a grouped frequency table	4-5
Reverse mean calculations	5
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	2
Draw a line of best fit on a scatter graph	2-3

FOUNDATION

Sub-topic	Grade
Use a line of best fit to estimate a value on a scatter graph	4
Identify and draw a frequency polygon	3
Describe probability using words	1-2
Understand the probability scale	2-3
Write probabilities as fractions , decimals or percentages	3-4
Relative frequency	4
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 fractions and identify probabilities	4
Complete a probability tree with decimals and identify probabilities	4
Complete a probability table	2
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')	4-5

G.C.S.E MATHS

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RATIO

Sub-topic	Grade
Form a ratio	2
Simplify ratios	2-3
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
Compare two ratios	4
Combine two ratios	4-5
Understand proportion	3
Solve problems involving proportion	4-5
Use direct proportion in everyday problems	5
Solve simple direct proportion problems	5
Read and use map scales	3-4
Interpret scale drawings	4-5
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

FOUNDATION

Sub-topic	Grade
Compound measures – Speed, distance and time	3-5
Compound measures – Density, mass and volume	3-5
Compound measures – Pressure, force and area	3-5
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

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