Mathematics Topic Lists 2017-2018

IGCSE

Unit	Topics	Unit	Topics
1 Sets	Introduction to notation, intersection, union, complement	20 Basic Probability	Relative frequency
	Venn diagrams - displaying data in a Venn		Theoretical probability calculations
2 Number Calculations	Negative number arithmetic, BIDMAS		Probability spaces
	Fraction arithmetic, introduce reciprocal	21 Transformations	Drawing and describing translations
	Fractions, decimals and percentages		Reflections and rotations
3 Basic Algebra	Simplifying, expanding single brackets		Drawing and describing enlargements
	Factorising linear expressions		Combinations of transformations
4 Solving Linear equations	Creating and solving linear eqns	22 Averages -Frequency tables	Averages from frequency tables
	Solving equations involving brackets	23 Algebra Review	Review of all algebra done so far this year….
	Equations with x on both sides	24 Similarity	Identifying similar triangles
	Negative signs outside brackets		Calculating unknown lengths
5 Substitution	Substituting values into formulae.	25 Pythagoras	Pythagoras' theorem - seen in 2nd year
	Solving basic quadratic and square root equations.		Finding hypotenuse, shortest side
	Using a formula, including working 'backwards'.		Problem solving questions
6 Sequences	Generating sequences and rules	26 Trigonometry	Labeling sides of triangles, Intro to relationship btw sides & angles
	nth term of an Arithmetic sequence, introduce un = a + (n-1)d		Tan ratio; calulating sides and angles
	Using differences to find the next term		Trig 3 ratios
7 Straight line graphs	Finding the gradient btwn two points		Sine and cosine ratios
	y = mx + c		Deciding which ratio to use,
	Finding the midpoint		Mixed trig questions - inc elevation/depression
	Parallel and Perpendicular lines	27 Graphs of inequalities	Regions bounded by one line
	ax+by=c		Regions bounded by more than one line
8 Basic Indices	Review rules including negative	28 Linear Simultaneous Equations	Graphical method - sim eqns
9 Factors, Muliples	Factors, multiples and primes		Simultaneous equations - elimination method
	HCF and LCM		Using simultaneous equations to solve Arithmetic Seq problems
10 Percentage change	Efficient calculator use	29 Rearranging formulae	Changing the subject of the formula
	Percentage calculations, increase, decrease, profit, loss		Subject appearing twice
11 Constructions	Constructing triangles, bisectors and problem solving questions	30 Circle theorems 1	Angle in a semicircle, isosceles triangles
12 Percentages	Multiplier method - revision, compound interest		Angle at centre twice that at circumference
	Finding the original amount		Same segment, cyclic quadrilaterals
13 Rounding	Rounding sf and dp		Tangent and radius 90
	Estimating - rounding to 1sf		Alternate segment
14 Standard Form 1	Positive and negative powers	31 Direct Proportion	Direct linear proportion
	Basic calculations		Direct non-linear proportion
15 Angle properties	Angle rules, parallel lines, interior and ext	41 Inverse Proportion	Inverse proportion, Inverse proportion calculations
	Bearings	32 Cumulative frequency	IQR, median, range etc
16 Area	Areas of basic shapes, circles, finding radius		Cumulative frequency graphs
	Double inequalities	33 Algebraic Fractions 1	Simplifying algebric fractions
18 MMMR, frequency diagrams	Constructing frequency tables, MMMR		Arithmetic with algebraic fractions
	Bar charts, pie charts, frequency polygons		Factorising into 1 bracket
	Discrete averages		Simplifying fractions using algebra, Simple fraction equations
19 Ratio and Proportion	Ratio	34 Bounds	Upper and Lower bounds
	Direct proportion - unitary method	35 Interior and Exterior Angles	Harder examples - GCSE style questions

Mathematics Topic Lists 2017-2018

IGCSE

Unit	Topics	Unit	Topics
36 Compound measures, real life graphs	Compound measures (density, pressure, average speed)	49 Similar shapes Area Volume	Areas of similar shapes
	Distance - time graphs, average speed		Volumes of similar shapes
	Interpreting real life graphs	50 Circle Theorems 2	Revision of theorems
38 Double brackets	Expanding double brackets, $(ax + b)^2$		Intersecting chords and tangents
	Forming equations and problem solving	51 Functions	Revision of notation, sub expressing into functions
	Factorising quadratics - 2 terms		Domain and range
	3 terms		Composite functions
	Forming and solving quadratic equations		Inverse functions
38a Triple brackets	Expanding triple brackets	52 3D Trigonometry	Review - Pythag & 2D Trig, bearings
37 Quadratic graphs	Plotting quadratic graphs, tables		Trig graphs - all angles
	Solving $ax^2 + bx + c = 0$ using graphs		3D Pythag
	Plotting factorised quadratics		3D trig
37a Cubic Graphs	Plotting cubic graphs	53 Algebraic fractions 2	Simplifying using factorising
39 Arcs, Sectors	Circles, semicircles and quadrants		Revision of adding and subtracting
	Arc length, Sectors of circles		x in denominator
40 Fractional Indices	Review rules, combinations of powers		Solving equations
	Fractional and negative indices		Solving equations, x in denom
42 Recurring Decimals	Converting between fractions and recurring decimals	54 Quadratic Simultaneous equations	Quadratic simultaneous equations
43 Standard Form 2	Estimating using standard form, calculations using standard form	55 Surface Area	Surface area
	Algebraic standard form calculations	56 Quadratic inequalities	Review - inequalities
44 Graphical solutions	Using graphs to solve equations		Solve quadratic inequalities
	Graphical solutions of simultaneous equations	57 Histograms	Constructing
45 Solving quadratics	Solving by factorising		Interpreting, missing details
	Factorising when a not 1	58 Vectors	Parallel and equivalent vectors, + & -
	Difference of 2 squares, Solving by factorising when a not 1		Component form adding etc
	Completing the square		Modulus/magnitude
	Derive quadratic formula by completing the square	59 Sets Problem Solving	Solving problems with Venn diagrams
	Quadratic formula		Shading Venn diagrams
	Number of solutions - intro to discriminant		Set builder notation
46 Sine and cosine rule	Sine rule	60 Differentiation	Differentiation - rule, basic ex
	Sine rule - ambigous case		$y = ax^n$
	Trig functions for obtuse angles, Trig Graphs		Turning points, stationary points
	Cosine rule		Tangents
	Area of non-right angled triangles		Motion of a particle in a straight line
	Trig and Bearings		Tangents to a curve
47 Tree Diagrams	And' 'Or' rules	61 Surds	Simplifying surds
	Tree diagrams		Further simplifying
	More Tree diagrams		Squaring surds
	Probability review		Rationalising the denominator
48 Volume	Volume of cuboids/ cylinders/ prisms	62 Graph Transformations	Review completing the square
	Pyramids, cones and spheres		Translations, link to completed square form and turning points
	Conversion of units for area and volume		Stretches
		63 Algebraic Proof	Algebraic proof e.g. show (2n+1)^2 - (2n+1) is even