KS4 Learning Journey

GCSE Crossover Tier – Year 10 Learning Cycle 1

Please watch the video on www.corbettmaths.com for each topic. *Topics in italics are extension topics.*

Key Skills - Number	Video number
Add, subtract, multiply and divide negative numbers	205,206,207
Add, subtract, multiply and divide decimals	90,91,94,92
Use BIDMAS for the order of operations	211
Understand the terms prime number, factor, multiple, square number, cube number, square root and cube root	225,216,220,226,228 212,214
Calculate powers and roots	172,228
Find the prime factor decomposition of a number	223
Find LCMs and HCFs	224
Round to decimal places and significant figures	279a, 278
Approximate the answer to a calculation by rounding to 1 significant figure	215

Key Skills – FDP & Ratio	Video number
Simplify a fraction	146
Write one quantity as a fraction of another	136
Add, subtract, multiply and divide fractions including mixed numbers	132,133,134,142,139
Understand the term reciprocal	145
Change a terminating decimal to a fraction and vice versa	123
Change a recurring decimal to a fraction and vice versa	96
Order a list of fractions	144
Write a ratio in simplest form	269
Divide an amount into a given ratio	270
Work out a missing amount given one quantity and a ratio	271
Solve problems involving ratio	270
Understand the relationship between ratios and fractions	269a

Key Skills – Algebra	Video number
Use algebraic notation	19
Substitute values into expressions and formulae	20
Understand the terms expression, equation, formulae, identity, term and factor	
Simplify an expression by collecting like terms	9
Rearrange a formula to change the subject	7, 8
Solve linear equations where the unknown appears on one or both sides	113

Surds	Video number
Simplify surds	305
Rationalise the denominator of a fraction containing surds	*307*
Simplify and manipulate algebraic expressions containing surds including expanding brackets and factorising quadratic expressions.	*308*

Angles	Video number
Understand the terms vertices, edges, planes, parallel lines, perpendicular lines, right angles	5
Find missing angles around a point, on a straight line, in a triangle and using vertically opposite angles	30,34,35
Find missing angles using alternate and corresponding angles on parallel lines	25
Know the names of polygons: pentagon, hexagon, octagon and decagon	1
Find interior or exterior angles in a polygon	32
Know the properties of special quadrilaterals and triangles	2,327

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Pythagoras' Theorem	Video number
Know the formula for Pythagoras' Theorem	257
Use Pythagoras' Theorem to find the length of a hypotenuse	257
Use Pythagoras' Theorem to find missing lengths in a right-angled triangle	257
Apply Pythagoras' Theorem to find lengths in right-angled triangles in 3D	259

Trigonometry	Video number
Use trigonometry to find lengths in right-angled triangles	330
Use trigonometry to find angles in right-angled triangles	331

Quadratics	Video number
Expand double brackets	14
Expand triple brackets	15
Factorise a quadratic expression with $1x^2$ into double brackets	118
Factorise a difference of 2 squares	120
Solve quadratic equations by factorising	266
Solve quadratic equations which need rearranging, by factorising	266
Plot graphs of quadratic functions	264
Find the approximate solutions of a quadratic equation using a graph	267c
Factorise a quadratic expression with other coefficients of x^2	*119*
Sketching quadratic graphs	
Completing the square	*10*
Finding the vertex	*371*

Probability	Video number
Systematically list items using lists, tables and diagrams	253
Use tables, two-way tables or frequency trees to calculate probabilities	319,376
Calculated expected outcomes of future events	248
Relate relative frequency to theoretical probability, using appropriate language and the 0 to 1 probability scale	248
Understand that probabilities add to 1 (for exhaustive mutually exclusive events)	245
Understand that increasing the number of trials of an experiment will give a better approximation to the theoretical probability value	
Construct sample space diagrams (possibility spaces) for two events and use it to calculate theoretical probabilities	246

Circles	Video number
Identify circle definitions and properties	61
Find the circumference of a circle	59
Calculate areas of circles and composite shapes	60, 47
Calculate the perimeter of shapes, including circles	62
Calculate arc lengths, angles and areas of sectors of circles	58,63
Apply the standard circle theorems	64,65

Units	Video number
Use standard units of mass, length, time, money and other measures	349a,b,c
Use standard units and related concepts to include length area, volume, capacity, mass	349
Use compound units including density, pressure, speed, rates of pay and unit pricing	384,385
Convert between compound units such as speed, density and pressure	

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Percentages	Video number
Interpret percentages as an operation, solve percentage problems using multipliers	239
Define percentages as parts of one hundred	
Apply percentages as a fraction or a decimal using as a multiplier	239
Express one quantity as a percentage of another	237
Compare two quantities using percentages	234
Work with percentages greater than 100	
Solve problems including percentage increase/decrease and simple interest	238

Straight Line Graphs	Video number
Work with coordinates in all four quadrants	84
Plot graphs of equations that correspond to straight lines	186,187
Recognise, sketch and interpret graphs of linear functions	187
Use the form $y = mx + c$ to identify perpendicular lines	197
Solve geometrical problems on coordinate axes	
Find the equation of a line through two given points	195
Find the equation of a line through one point given the gradient	194
Use the form y=mx = c to identify perpendicular lines	197
Identify and interpret gradients and intercepts of straight lines, both graphically and algebraically	189,191

Sequences	Video number
Continue a sequence	286
Generate terms of a sequence using the nth term	288
Continue a picture pattern	290
Recognise and use sequences of triangular, square and cube numbers and arithmetic progressions	287a
Recognise and use Fibonacci-type sequences, quadratic sequences and geometric progressions	
Find the nth term of linear sequences	288
Find the nth term of simple quadratic sequences eg $2n^2,\ n^2 + 3$	
Find the nth term of more difficult quadratic sequences	*388*

Transformations	Video number
Be able to reflect shapes	272
Be able to describe a reflection	273
Be able to rotate shapes	275
Be able to describe a rotation	275
Be able to translate shapes and describe a given translation using a vector	325,326
Be able to enlarge a shape using positive integer scale factors	104
Be able to enlarge a shape using negative integer scale factors	108
Be able to enlarge a shape using a fractional scale factor	107
Identify and construct congruent and similar shapes	66,291
Describe the effects of combining transformations	

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Key Skills Statistics	Video number
Interpret and construct frequency tables	54
Interpret and construct bar charts, pictograms, and vertical line charts	147,148,161,162
Calculate the median, mean, mode and modal class from lists or tables	50-55
Calculate the spread of data involving range (including consideration of outliers) and including quartiles and inter-quartile range	57
Interpret and construct pie charts	163,164

Congruence and Similarity	Video number
Understand and identify the conditions to define congruency e.g. SSS, SAS, ASA, RHS	67
Work out and then use the scale factor of similar shapes to find the length of a side	292
Apply knowledge of similar shapes in area and volume questions	293a,293b

Proportion	Video number
Solve problems involving direct proportion	255a,255c,256
Work out best buy problems	210
Solve problems involving inverse proportion	255
Understand and use proportion as equality in ratios	
Recognise and interpret graphs that describe direct and inverse proportion	255b
Solve algebraic problems involving direct proportion	*254*
Solve algebraic problems involving inverse proportion	*255*

Maps and Bearings	Video number
Interpret and use maps and scale drawings	283
Construct scale drawings	283
Measure and draw bearings	26,27

Constructions	Video number
Construct triangles with given measurements	81-83
Construct a perpendicular bisector of a line segment	78
Construct a perpendicular to a given line from a given point	79
Construct a perpendicular to a give line at a given point	80
Construct an angle bisector	72
Solve loci problems	75-77