

Year 10 Topic Outline [2019/20]

Topic	Outline of content	Revision Guide	Workbook	MathsWatch
Number	Written methods – column addition and subtraction, long multiplication, bus stop division	See class notes		17 – 20
	Negative numbers	See class notes	Page 15	23, 68a, 68b
	Types of number	Page 2 – 3	Page 1	28, 81
	Prime factorisation	Page 3 – 4	Page 2 – 4	78
	HCF and LCM			79, 80
	Rounding to a given degree of accuracy	Page 10 – 11	Page 9 – 10	31, 32, 90
	Estimation (including roots)			91
	Error intervals	Page 12	Page 11 – 12	155
	Calculations involving bounds			132, 206
Statistics	Populations and sampling	Page 114	Page 116	152, 176
	Mean, median, mode and range	Page 116	Page 118 – 119	62
	Averages from grouped and ungrouped frequency tables	Page 117 – 118	Page 120 – 122	130a, 130b
	Histograms – draw from a table of data and interpret	Page 121, 125	Page 127 – 129	205
	Cumulative frequency and box plots – construct from a frequency table and interpret	Page 119 – 120, 124	Page 123 – 126	186, 187
	Scatter graphs – draw and interpret using lines of best fit	Page 123	Page 132	129
	Time series graphs	Page 122	Page 131	153
Expressions and Formulae	Simplify algebraic expressions – collect like terms, algebraic products	Page 16	Page 15	33 – 35
	Expand single and double brackets	Page 18	Page 18	93, 134a, 134b
	Factorise expressions into a single bracket	Page 19	Page 19	94
	Factorise quadratics	Page 19, 25 – 26	Page 25	157, 192
	BIDMAS (order of operations)	Page 2	Page 1	75
	Substitute into expressions and formulae	See class notes	Page 15	95
	Construct formulae and expressions from real word contexts and diagrams	See class notes		137
	Rearrange formulae	Page 23 – 24	Page 23 – 24	136, 190
Shape and Pythagoras' Theorem	Area and perimeter of basic shapes (including compound shapes)	Page 82	Page 83 – 84	53 – 56
	Parts of a circle	Page 83	Page 85	116, 149
	Area and circumference of circles			117, 118
	Lengths of arcs and areas of sectors			167
	Pythagoras' theorem – 2D problems	Page 95	Page 95 – 97	150a, 150b
	Pythagoras' theorem – 3D problems	Page 101	Page 104	217
Ratio and Proportion	Simplify ratios	Page 59	Page 58, 60	38
	Dividing amounts into ratios (including problem solving)	Page 59 – 61	Page 58 – 60	106

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Ratio and Proportion	Direct proportion	Page 62 – 63	Page 61 – 62	42, 199
	Inverse proportion			
	Percentages of amounts	Page 64	Page 63 – 65	86, 87
	Increasing and decreasing amounts by a percentage			108
	Percentage change			109
	Reverse percentages	Page 65		110
	Simple and compound interest	Page 66 – 67	Page 66 – 67	111, 164
Equations and Inequalities	Form and solve linear equations – unknown on one or both sides, brackets, fractions where the unknown is in the numerator	Page 21 – 22	Page 21 – 22	135a
	Solve inequalities and show solutions on a number line	Page 33	Page 33 – 34	138, 139
	Solve quadratic equations by factorising	Page 25 – 26	Page 25	157
	Plot linear graphs	Page 45	Page 43	96
	Straight line graphs – $y = mx + c$	Page 43 – 47	Page 41 – 45	159a, 159b
	Solve linear simultaneous equations graphically	Page 52	Page 51	140
Fractions and Decimals	Calculations with decimals – addition, subtraction, multiplication, division	See class notes		17, 18, 66, 67
	Converting between decimals and fractions (including recurring decimals)	Page 7 – 9	Page 7 – 8	84, 177
	Calculations with fractions – addition, subtraction, multiplication, division, BIDMAS (including mixed numbers)	Page 5 – 6	Page 5 – 6	71a, 71b, 73, 74
	Algebraic fractions – simplify, addition, subtraction, multiplication	Page 30	Page 29 – 30	210a
Indices	Square numbers – know the first 15 square numbers	See class notes	Page 1	81
	Cube numbers – know the first 10 cube numbers			
	Index laws (including applying to algebraic fractions)	Page 17	Page 16 – 17	131
	Calculate integers raised to negative or fractional powers			
Volume and Surface Area	Surface area of prisms (including cylinders)	Page 84	Page 86	114a, 114b
	Surface area of spheres, cones and composite solids (formula given in the exam)			169, 171
	Surface area of pyramids			170
	Volume of prisms (including cylinders)	Page 85 – 86	Page 87 – 89	115, 119
	Volume of spheres, cones and composite solids (formula given in the exam)			

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Volume and Surface Area	Volume of pyramids (formula given in the exam)	Page 85 – 86	Page 87 – 89	170
Probability	Calculate basic probabilities and relative frequencies	Page 106, 108 – 109	Page 107, 109 – 110	14, 59
	Compare theoretical and experimental probabilities			125
	Calculate combined probabilities – listing outcomes, sample space diagrams (possibility spaces)	Page 107	Page 108	58, 126
	Venn diagrams – construct and use to solve problems	Page 114	Page 114 – 115	127a, 127b, 185
	Frequency trees – construct and use to solve problems	Page 109	Page 110 (Q6)	65a, 65b
Constructions, Bearings and scale drawings	Construct triangles – SSS, SAS, ASA	Page 88 – 91	Page 92 – 93	47, 147
	Construct an angle bisector and perpendicular bisector of a line			145, 146a, 146b
	Loci and shading regions			165
	Basic angle rules	Page 71 – 73	Page 73 – 74	45, 121
	Bearings and scale drawings – problem solving involving Pythagoras	Page 92	Page 94	4, 124
Standard Form	Converting numbers in and out of standard form	Page 13	Page 13	83
	Calculations in standard form – calculator and non-calculator	Page 14	Page 14	
Angles and proof	Properties of triangles and quadrilaterals	Page 75	Page 76	122
	Finding missing angles using angle rules (including parallel lines)	Page 71 – 73	Page 73 – 74	120
	Angles in polygons	Page 74	Page 75	123
	Angle proofs	See class notes		-
Quadratic Equations and Cubic Expressions	Expand double brackets (recap)	Page 18	Page 18	134b
	Factorise quadratics (including difference of two squares – DOTS)	Page 19, 25 – 26	Page 25	157, 192
	Solve quadratic equations (recap)	Page 25 – 26	Page 25	157
	Expand products of three or more brackets	Page 18	Page 18	178
Plans, elevations and 3D Pythagoras	Construct plans and elevations (projections) of 3D solids	Page 87	Page 91	51
	Represent 3D solids from plans and elevations on isometric paper			
	Solve surface area and volume problems from information provided in plan and elevation diagrams	See class notes		
	3D Pythagoras' theorem – problem solving	Page 101 – 102	Page 104	217
Graphs and Simultaneous Equations	Plotting straight line graphs (recap)	Page 45	Page 43	96
	Solve linear simultaneous equations algebraically	Page 37 – 38, 52	Page 37, 46, 51	162

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	Solve simultaneous equations graphically – two linear (recap) or one linear and one quadratic			140, 211
	Solve quadratic equations graphically			160
Compound Measures	Use and convert units of measurement – length, area, volume/capacity, mass, time, money	Page 68	Page 68 – 69	112
	Use and convert compound units – speed, rates of pay, unit pricing, density, pressure	Page 69	Page 70 – 72	142
	Use and convert compound units in algebraic contexts	See class notes		-
Sequences	Recognise different types of sequences – arithmetic, geometric, quadratic, cubic, triangular, Fibonacci	See class notes		104, 141
	Generate sequences from a formula for the nth term – linear, quadratic, geometric	See class notes		102, 163
	Use subscript notation for position-to-term and term-to-term rules	Page 31 – 32	Page 31 – 32	-
	Find a formula for the nth term of an arithmetic (linear) sequence			103
	Find a formula for the nth term of a quadratic sequence			213
	Find the formula for the nth term of a geometric series			-
Surds	Simplify surds	Page 20	Page 20	207a, 207b
	Expanding brackets involving surds – single and double brackets			207b
	Rationalising the denominator			207c
	Problem solving with surds – magnitude, show that, Pythagoras			207b
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	Non-right angle – sine rule, cosine rule, area of a triangle	Page 99 – 100, 102	Page 101 – 104	201 – 203