	Numbers and the number system	Book 7C pages	Book 8C pages	Book 9C pages
Level 7	• understand and use proportionality			
Level 6	• use the equivalence of fractions, decimals and percentages to compare proportions	77-80 215-217 273-274	60-65 189	
Level 5	• use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 and 1000 and explain the effect	136-138	96	1
	• round decimals to the nearest decimal place and order negative numbers in context	230-231 295-297	44-45	
	• recognise and use number patterns and relationships	32-36	1-4 240	
	• use equivalence between fractions and order fractions and decimals	74 -77	6-7	
	• reduce a fraction to its simplest form by cancelling common factors	65- 68	6-7	26-29
	• understand simple ratio	226-227	210-211	178-179
Level 4	• recognise and describe number patterns	31-32		
	• recognise and describe number relationships including multiple, factor and square	146-153 270-272	13-16	
	• use place value to multiply and divide whole numbers by 10 or 100			
	• recognise approximate proportions of a whole and use simple fractions and percentages to describe these			
	• order decimals to three decimal places	131-132	99	3
	• begin to understand simple ratio			

	Calculating	**Book 7C pages**	**Book 8C pages**	**Book 9C pages**
Level 7	• calculate the result of any proportional change using multiplication methods			
	• understand the effects of multiplying and dividing numbers between 0 and 1			8
	• add, subtract, multiply and divide fractions			26-29 213-217
	• make and justify estimates and approximations of calculations; estimate calculations by rounding numbers to one significant figure and multiplying and dividing mentally			72-76
	• use a calculator efficiently and appropriately to perform complex calculations with numbers of any size, knowing not to round during intermediate steps of a calculation			52-56
Level 6	• calculate percentages and find the outcome of a given percentage increase or decrease	220-221	261-262	149-153 213-217 303-305
	• divide a quantity into two or more parts in a given ratio and solve problems involving ratio and direct proportion	227-228	212-215	180-184
	• use proportional reasoning to solve a problem, choosing the correct numbers to take as 100% or as a whole		256-258	153-155
	• add and subtract fractions by writing them with a common denominator, calculate fractions of quantities (fraction answers), multiply and divide an integer by a fraction	72 –74	5- 9 10-11 42-43 185-188	26-29 213-217
Level 5	• use known facts, place value , knowledge of operations and brackets to calculate including using all four operations with decimals to two places	17 23-29 133-135 141-143 275-277	96-98 100-105 107-112 294-296	4-6 51-56 211-212

	• use a calculator where appropriate to calculate fractions / percentages of quantities / measurements	69-71 219-220 221-223 277-278	9-10 258-260	146-148 213-217
	• understand and use an appropriate non-calculator method for solving problems that involve multiplying and dividing any three digit number by any two digit number	19-22 125-127	96-97	6-8 211-212
	• solve simple problems involving ordering, adding, subtracting negative numbers in context	231-236	20-25 216-218	212
	• solve simple problems involving ratio and direct proportion	223-225		178-179
	• apply inverse operations and approximate to check answers to problems are of the correct magnitude	297-299	46-50	2-3 72-76
Level 4	• use a range of mental methods of computation with all operations	1-4 54-55 117-118 202-203 254-255 308-309		
	• recall multiplication facts up to 10 x 10 and quickly derive corresponding division facts	9-11 13-14		
	• use efficient written methods of addition and subtraction and of short multiplication and division	5-8 12-13 15		
	• multiply a simple decimal by a single digit	139-140		
	• solve problems with or without a calculator	48-51		
	• check the reasonableness of results with reference to the context or size of numbers			

	Algebra	**Book 7C pages**	**Book 8C pages**	**Book 9C pages**
Level 7	• square a linear expression, and expand and simplify the product of two linear expressions of the form $(x \pm n)$ and simplify the corresponding quadratic expression			
	• use algebraic and graphical methods to solve simultaneous linear equations in two variables			287-291
	• solve inequalities in one variable and represent the solution set on a number line			299-302
	• use formulae from mathematics and other subjects; substitute numbers into expressions and formulae; derive a formula and, in simple cases, change its subject			15-16 38-40 243-245
	• find the next term and nth term of quadratic sequences and functions and explore their properties			267-168 248
	• plot graphs of simple quadratics and cubic functions, eg $y = x^2$, $y = 3x^2 + 4$, $y = x^3$			95-96 246
Level 6	• use systematic trial and improvement methods and ICT tools to find approximate solutions to equations such as $x^3 + x = 20$		178-180	157-161 247
	• construct and solve linear equations with integer coefficients, using an appropriate method	241-244 310-312	175-178 181-183 280-281	11-14 66-72 156-157 242-243 247-248
	• generate terms of a sequence using term-to-term and position-to-term definitions of the sequence, on paper and using ICT; write an expression to describe the nth term of an arithmetic sequence	312-317	146 218-225 255	163-166 169-170 247

	• plot the graphs of linear functions, where y is given explicitly in terms of x; recognise that equations of the form $y = mx + c$ correspond to straight-line graphs	160-165	122-125 127-129 237-239	93-94 96-100 246
	• construct functions arising from real life problems and plot their corresponding graphs; interpret graphs arising from real situations	289 -290	165-170	226-232
Level 5	• construct, express in symbolic form, and use simple formulae involving one or two operations	95-106 237-240 245-246 291-292	51-56 113-118 171-174 276-279	10
	• use and interpret co-ordinates in all four quadrants	120-125 158-160 251-252	120-122 143-144	
Level 4	• begin to use simple formulae expressed in words			
	• use and interpret co-ordinates in the first quadrant	119-120 250	142	
	Shape, space and measure	**Book 7C pages**	**Book 8C pages**	**Book 9C pages**
Level 7	• understand and apply Pythagoras' theorem when solving problems in 2-D			207-210 274-275
	• calculate lengths, areas and volumes in plane shapes and right prisms			126-132 275-276
	• enlarge 2-D shapes, given a centre of enlargement and a fractional scale factor on paper and using ICT; recognise the similarity of the resulting shapes			112-115 271
	• find the locus of a point that moves according to a given rule, both by reasoning and using ICT		75-76	184-187 273-274
	• recognise that measurements given to the nearest whole unit may be inaccurate by up to one half of the unit in either direction			248-251

	• understand and use measures of speed (and other compound measures such as density or pressure) to solve problems			226-229 235-239
Level 6	• classify quadrilaterals by their geometric properties	211-212		18-21
	• solve geometrical problems using properties of angles, of parallel and intersecting lines, and of triangles and other polygons		70-72	21-25 267-269
	• identify alternate and corresponding angles; understand a proof that the sum of the angles of a triangle is 180◦ and of a quadrilateral is 360◦		66-72	25-26 267-268
	• devise instructions for a computer to generate and transform shapes and paths			
	• visualise and use 2-D representations of 3-D objects		286-287	123-126
	• enlarge 2-D shapes, given a centre of enlargement and a positive whole-number scale factor		230-231	112-115 271
	• know that translations, rotations and reflections preserve length and angle and map objects onto congruent images		159-162	108-112 270-271
	• use straight edge and compasses to do standard constructions	327-331	74-75 76-78	63-65 272
	• deduce and use formulae for the area of a triangle and parallelogram, and the volume of a cuboid; calculate volumes and surface areas of cuboids	44-46	28 -33 241-243 297-300	100-102 102-106 264-265 305-306
	• know and use the formulae for the circumference and area of a circle		79-85 244-245	56-62 266-267

Level 5	• use a wider range of properties of 2-D and 3-D shapes and identify all the symmetries of 2-D shapes	123-125 259-265	283-286	
	• use language associated with angle and know and use the angle sums of a triangle and that of angles at a point	82-84 86-92 325-327		
	• reason about position and movement and transform shapes	256-258	130-134 156-159 227-229	108-112
	• measure and draw angles to the nearest degree, when constructing models and drawing or using shapes	84-85 204-206	74-75	
	• read and interpret scales on a range of measuring instruments, explaining what each labelled division represents	132-133	98	
	• solve problems involving the conversion of units and make sensible estimates of a range of measures in relation to everyday situations	318-321 323	273-275	
	• understand and use the formula for the area of a rectangle and distinguish area from perimeter	41-43	28-30 32-33	
Level 4	• use the properties of 2-D and 3-D shapes	332-334		
	• make 3-D models by linking given faces or edges and draw common 2-D shapes in different orientations on grids	335-337		
	• reflect simple shapes in a mirror line, translate shapes horizontally or vertically and begin to rotate a simple shape or object about its centre or vertex	266-268		
	• choose and use appropriate units and instruments			
	• interpret, with appropriate accuracy, numbers on a range of measuring instruments	321-322		

	• find perimeters of simple shapes and find areas by counting squares	38 – 40		
	Handling Data	**Book 7C pages**	**Book 8C pages**	**Book 9C pages**
Level 7	• suggest a problem to explore using statistical methods, frame questions and raise conjectures; identify possible sources of bias and how to plan how to minimise it			294-299
	• select, construct and modify on paper and using ICT suitable graphical representations to progress an enquiry including frequency polygons and lines of best fit on scatter graphs			33-34 232-235 294-299
	• estimate the mean, median and range of a set of grouped data and determine the modal class, selecting the statistic most appropriate to the line of enquiry			175-177
	• compare two or more distributions and make inferences, using the shape of the distribution and measures of average and range			172-173 234-235
	• understand relative frequency as an estimate of probability and use this to compare outcomes of an experiment		267	
	• examine critically the results of a statistical enquiry, and justify the choice of statistical representation in written presentation			294-299
Level 6	• design a survey or experiments to capture the necessary data from one or more source; design, trial and, if necessary, refine data collection sheets; construct tables for large discrete and continuous sets of raw data, choosing suitable class intervals; design and use two way tables		190-193	294-299

	• select, construct and modify, on paper and using ICT:			
	- pie charts for categorical data		194	118-120
	- bar charts and frequency diagrams for discrete and continuous data		192-193	115-118
	- simple time graphs for time series		165-169	
	- scatter graphs		196-198	31-34
	and identify which are most useful in the context of the problem			
	• find and record all possible mutually exclusive outcomes for single events and two successive events in a systematic way		268-270	204-205
	• know that the sum of probabilities of all mutually exclusive outcomes is 1 and use this when solving problems		263-266	224-225
	• communicate interpretations and results of a statistical survey using selected tables, graphs and diagrams in support			294-299
Level 5	• ask questions, plan how to answer them and collect the data required	176		294-299
	• in probability, select methods based on equally likely outcomes and experimental evidence, as appropriate	179-184 279-285	263-267	219-224
	• understand and use the probability scale from 0 to 1	177-178		
	• understand and use the mean of discrete data and compare two simple distributions, using the range and one of mode, median or mean	56-60 61-64	148-155	170-173
	• understand that different outcomes may result from repeating an experiment	179-180	267-268	219-220

	• interpret graphs and diagrams, including pie charts, and draw conclusions • create and interpret line graphs where the intermediate values have meaning	174-176	194-196 125-127	118-120
Level 4	• collect and record discrete data • group data, where appropriate, in equal class intervals • continue to use Venn and Carroll diagrams to record their sorting and classifying of information • construct and interpret frequency diagrams and simple line graphs • understand and use the mode and range to describe sets of data	165-169 170-171 172-173 285-288 56-60	148-150	
	Using and applying mathematics	**Book 7C pages**	**Book 8C pages**	**Book 9C pages**
Level 7	• solve increasingly demanding problems and evaluate solutions; explore connections in mathematics across a range of contexts; number, algebra, shape, space and measures, and handling data; refine or extend the mathematics used to generate fuller solutions • give reasons for choice of presentation, explaining selected features and showing insight into the problems structure • justify generalisations, arguments or solutions • appreciate the difference between mathematical explanation and experimental evidence		240 255 240 56-58 240 255 240 255	49-50 69-72 128-132 134-141 169-170 196-201 253-259 276-286 303-307 307-311 102 169-170 189-196 298-299 102 169-170 298-299 169-170

Level 6	• solve problems and carry through substantial tasks by breaking them into smaller, more manageable tasks, using a range of efficient techniques, methods and resources, including ICT; give solutions to an appropriate degree of accuracy	80 153-155	18-19 56-58 146 240 255	77-82 104-106 169-170 204-205 303-307
	• interpret, discuss and synthesise information presented in a variety of mathematical forms		34-40 56-58 87-94 137-141 165-170 181-183 190-198 201-207 240 243 247-251 255 267-270 295 299-300 302-306	9 42-47 49-50 57-62 69-72 77-82 82-88 91-92 102 104-106 128-132 134-141 143-145 169-170 189-196 196-201 204-205 253-259 262-263 276-286 303-307 307-311
	• present a concise, reasoned argument, using symbols, diagrams, graphs and related explanatory texts	80 102	18-19 56-58 68-69 87-94 137-141 146 240 255	77-82 82-88 102 169-170 204-205 253-259 298-299
	• use logical argument to establish the truth of a statement		56-58 68-69 165-170 240	106 169-170 204-205 298-299
Level 5	• identify and obtain necessary information to carry through a task and solve mathematical problems	52 80 123-125 143 153-155 176 287-290 317	18-19 50 56-58 125-127 146 178-180 190-198 240	9 77-82 82-88 143-145 303-307

	• check results, considering whether these are reasonable	ongoing throughout book	ongoing throughout book	ongoing throughout book
	• solve word problems and investigations from a range of contexts	17 46 48-51 64 80 102 108-112 127 135-136 153-155 187-201 212 247-249 300-304 307 313-317 333-334 339-342	18-19 32-33 34-40 56-58 75-76 87-94 137-141 146 181-183 201-207 233 240 243 247-251 255 284-286 295 299-300 302-306	9 42-47 77-82 82-88 104-106 143-145 303-307
	• show understanding of situations by describing them mathematically using symbols, words and diagrams	80 95- 97 161-162 176 194 240 243-244 307 313-317	18-19 29 32-33 53-58 87-94 128-129 133-134 137-141 146 157-160 181-183 218-225 230-231 239 240 255 299-300	77-82 143-145 169-170 276-286
	• draw simple conclusions of their own and give an explanation of their reasoning	13 46 61-64 80 102 153-155 169 176 180 187-201 212 307 317 333 - 334	18-19 45 56-58 79 146 150-151 165-170 193-198 206-207 240 255 267-270 295	169-170

Level 4	• develop own strategies for solving problems	11 53 105-106 187-201 212		
	• use their own strategies within mathematics and in applying mathematics to practical contexts	6-7 45 53 60 105-106		
	• present information and results in a clear and organised way	42 45 169 265-266 317		
	• search for a solution by trying out ideas of their own	9 26 33 53 105-106 123-125		