3.2 Sequences, functions and graphs

Outcome	3a G	4c F	4b F	4a F	5c E	5b E	5a E	6c D	6b D
3.2a Generating Terms	describe integer sequences	generate terms of a simple sequence. Given a rule (term to term or position to term)		generate terms of a linear sequence using term to term and position to term rules, on paper and using a spreadsheet or graphics calculator				generate terms of a sequence using term-to-term and position-to-term rules, on paper and using ICT	
3.2b General Term				generate sequences from patterns or practical contexts and describe the general term in simple cases				use linear expressions to describe the nth term of a simple arithmetic sequence, justifying its form by referring to the activity or practical context from which it was generated	
3.2c Expressing functions		express simple functions in words, then using symbols	represent them in mappings			express simple functions algebraically and represent them in mapings or on a spreadsheet			
3.2d Plotting functions					generate co-ordinate paris that satisfy a simple linear rule	plot the graphs of simple linear functions, where y is given explicitly in terms of x, on paper and using ICT	recognise straight-line graphs parallel to the x-axis or y-axis	generate points in all four quadrants and plot the graphs of linear functions, where y is given explicitly in terms of x, on paper and using ICT	recognise that equations of the form y = mx + c correspond to straightline graphs
3.2e Real-life graphs							plot and interpret the graphs of simple linear functions arising from real-life situations, eg conversion graphs		construct linear functions arising from real-life problems and plot their corresponding graphs
3.2f Loci									
3.2g Quadratic functions									
3.2h Graphical transformations									
3.2i Features of graphical equations									
3.2j Graphs to solve equations									

3.2 Sequences, functions and graphs

6a D	7c C	7b C	7a B	8c B	8b A	8a A	EP A*
	deduce properties of the sequences of triangular and square numbers from spatial patterns						
generate sequences from practical contexts and write and justify an expression to describe the nth term of an arithmetic sequence	find the next term and the nth term of quadratic sequences and explore their properties						
	find the inverse of a linear function				plot the graph of the inverse of a linear function		
find the gradient of lines given by the equation y = mx + c, given values for m and c	generate points and plot graphs of linear functions, where y is given implicitly in terms of x (eg ay + bx = 0), on paper and using ICT	understand that equations in the form y = mx + c represent a straight line and that m is the gradient and c is the value of the y-intercept; investigate the gradients of parallel lines and lines perpendicular to these lines	identify the equations of straightline graphs that are parallel		find the gradient and equation of a straightline graph that is perpendicular to a given line		
discuss and interpret linear graphs arising from real situations, eg distance-time graphs	construct functions arising from real-life problems and plot their corresponding graphs	interpret graphs arising from real situations eg time series graphs	understand that the point of intersection of two different lines in the same two variables that simultaneously describe a real situation is the solution to the simultaneous equations represented by the lines	find approximate solutions of a quadratic equation from the graph of the corresponding quadratic function		know and understand that the intersection points of the graphs of a linear and quadratic function are the approximate solutions to the corresponding simultaneous equations	
							construct the graphs of simple loci, including the circle $x^2 + y^2 = r^2$; find graphically the intersection points of a given straight line with this circle and know this represents the solution to the corresponding two simultaneous equations
	explore simple properties of quadratic functions	plot graphs of simple quadratic and cubic functions, eg $y = x^3$, $y = 3x^2$, $y = x^2$		plot graphs of more complex quadratic and cubic functions	estimate values at specific points, including minima and maxima	plot and recognise the characteristic shapes of graphs of simple cubic functions, reciprocal functions, exponential functions and trigonometric functions, on paper and using ICT	find the roots of quadratic, cubic, reciprocal, exponential and trigonometric functions using graphs
					identify and sketch graphs of linear and simple quadratic and cubic functions	understand the effect on the graph of addition of (or multiplication by) and constant	apply to the graph y = f(x) the transformations y = f(x) + a, y = f(ax), y = f(x + a) and y = af(x) for linear, quadratic, sine and cosine functions