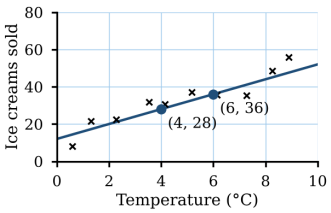
Day 12	IGCSE 10-a-day
1 The nth term of a sequence is $3n^2 - 3n$. (a) Show that the difference between the (n + 1)th term and the nth term is 6n. (b) Two consecutive terms of the sequence differ by 102. Find the value of n for the first of these two terms.	
2 In triangle PQR, side QR is extended to S. Angle QPR = (2x − 20)° Angle PQR = (2x + 25)° Angle PRS = (3x + 32)° (a) Work out the value of x. (b) Work out the size of angle PRQ.	
3 The 2nd term of an arithmetic sequence is 7. The 6th term of the sequence is 19. (a) Find an expression for the nth term of the sequence. (b) Is 82 a term of the sequence? You must show your working.	
4 y = x(x + 4)(2x + 3) Work out the gradient of the curve at the point where x = 1.	
5 The scatter graph shows temperature (x) and ice creams sold (y). The line of best fit passes through (4, 28) and (6, 36). (a) Find its equation in the form y = mx + c. (b) Explain what its gradient tells you. 	

Day 12	IGCSE 10-a-day
6 $y = (x - 3)^2(x + 1)$ Show that $\frac{dy}{dx} = (x - 3)(3x - 1)$.	
7 $f(x) = \frac{4}{x + 4} + 4$ (a) Find $f^{-1}(x)$. (b) Find the value of $f^{-1}(8)$.	
8 The curve $y = 2x^3 + 3x^2 - 12x + 6$ has two stationary points, A and B. Work out the vertical distance between A and B.	
9 69 students were asked which activities they do. A: study Art B: study Music C: study Drama $n(A) = 43$, $n(B) = 31$, $n(C) = 46$, $n(A \cap B) = 19$, $n(A \cap C) = 27$, $n(B \cap C) = 19$, $n(A \cap B \cap C) = 13$. (a) Work out how many are in none of A, B and C. (b) Work out how many are in exactly one of A, B and C.	
10 Show that $\sqrt{49 + 20\sqrt{6}} = 5 + 2\sqrt{6}$	