Day 176	IGCSE 10-a-day
1 The 4-digit number 181k is a multiple of 6. k is a single digit. Find all the possible values of k.	
2 Sofia, Oscar and Jamal share some money. Sofia : Oscar = 6 : 2 Oscar : Jamal = 8 : 7 (a) Work out the ratio Sofia : Oscar : Jamal. (b) They share £234 altogether. How much money does Oscar get?	
3 $y = \frac{(x + 3)^2}{x}$ $(x \neq 0)$ (a) Show that $\frac{dy}{dx} = \frac{(x - 3)(x + 3)}{x^2}$. (b) Find the gradient when $x = 2$.	
4 $f(x) = 2x - 1$ and $g(x) = 3x^2 - x - 5$. (a) Find $f^{-1}g(x)$. (b) Work out $f^{-1}g(2)$.	
5 $y = -x^3 - 6x^2 + 8$ (a) Find the coordinates of the stationary points. (b) Use $\frac{d^2y}{dx^2}$ to decide whether each is a maximum or a minimum.	

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6 P is inversely proportional to the square of t. When t = 3, P = 1. (a) Find a formula for P in terms of t. (b) Find the value of t when P = 9.	
7 Work out $(4.2 \times 10^{-4}) \div (3 \times 10^{-7})$ Give your answer in standard form.	
8 £1,000 is invested for 3 years at 3% per year compound interest. (Calculator) Work out the total amount at the end of 3 years.	
9 A circle has equation $x^2 + y^2 = 625$. The point P(−24, −7) lies on the circle. (a) Find the equation of the tangent to the circle at P. Give your answer in the form ax + by = c, where a, b and c are integers. (b) The tangent meets the x-axis at the point T. Write down the coordinates of T.	
10 The diagram shows a sketch of the curve $y = -x^3 - 6x^2 - 9x - 6$ and the line y = k. The line meets the curve at three different points. Find the range of possible values of k. 	