Day 162	IGCSE 10-a-day
1 $y = \frac{4x^2 - 5x + 7}{x}$ Find $\frac{dy}{dx}$.	
2 The first three terms of a geometric sequence are 8, 4, 2 (a) Write down the common ratio. (b) Work out the 6th term.	
3 Triangle P has vertices A(−3, 1), B(−6, −2) and C(−2, −2). Triangle Q has vertices A'(−9, −5), B'(−18, −14) and C'(−6, −14). Q is an enlargement of P. Describe fully the single transformation that maps P onto Q.	
4 $f(x) = 2x + 3$ and $g(x) = x^2 - 1$. Solve $fg(x) = 3$.	
5 A curve has equation $y = x^3 - 6x^2 + 8x - 3$. Find the equations of the two tangents to the curve that are parallel to the line $y = 8x + 7$.	

Day 162	IGCSE 10-a-day
6 A rectangle has length $(3x + 6)$ cm and width $(x + 3)$ cm. The area of the rectangle is 126 cm^2. (a) Show that $3x^2 + 15x - 108 = 0$ (b) Work out the perimeter of the rectangle.	
7 The curve $y = x^3 + ax^2 + bx$ has gradient 2 when $x = -3$ and gradient -3 when $x = -2$. Find the values of a and b.	
8 A train travels at a constant speed of 108 km/h. It takes 20 seconds to go completely through a tunnel which is 210 m long. Work out the length of the train, in metres.	
9 Prove algebraically that the difference between the squares of any two odd numbers is a multiple of 8.	
10 Show that $\sqrt{79 + 24\sqrt{7}} = 4 + 3\sqrt{7}$	