Day 273	A Level Maths: C Tier 10-a-day
1 In an arithmetic sequence $u_5 = 12$ and $u_8 = 24$. Find the first term and the common difference.	
2 Find (a) $\int 8 \sec^2 4x \, dx$ (b) $\int 8 \cos 4x \, dx$	
3 For a data set $Q_1 = 28$ and $Q_3 = 46$. A value is an outlier if it is more than 1.5 × IQR above Q_3 or below Q_1. Determine whether -1 and 38 are outliers.	
4 $f(x) = (x + 1)^2 + 2$, $x \geq 0$. Find the range of f.	
5 Solve $\sin(x - 15°) = \frac{1}{2}$ for $0° \leq x \leq 360°$.	

Day 273	A Level Maths: C Tier 10-a-day
6 Write $x^2 - 4x + 2$ in the form $(x + p)^2 + q$, and state the coordinates of the minimum point of $y = x^2 - 4x + 2$.	
7 Two forces of magnitudes 8 N and 15 N act on a particle at right angles to each other. Find (a) the magnitude of the resultant, (b) the angle it makes with the 8 N force, to 1 d.p.	
8 $X \sim B(25, p)$. H_0: $p = 0.3$, H_1: $p \neq 0.3$. In a sample, $x = 4$. Test at the 10% significance level.	
9 Solve $7^{x+2} = 100$. Give your answer to 3 significant figures.	
10 A train's engine works at a constant rate of 12 kW. Find the driving force when the vehicle is moving at 12 m s^{-1}.	