Day 102	A Level Maths: C Tier 10-a-day
1 A population of 250 grows by 2% each year. After how many whole years will it first exceed 750?	
2 Evaluate $\sum_{r=1}^{19} (5r + 8)$.	
3 Solve $\sin x = 0.70$ for $0° \leq x \leq 360°$. Give your answers to 1 decimal place.	
4 X ~ B(n, p) has mean 18 and variance 4.5. Find n and p.	
5 A sequence is defined by $u_{n+2} = u_{n+1} + u_n$, with $u_1 = 2$ and $u_2 = 4$. Find u_6.	

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6 A particle of mass 2 kg is released from rest and falls 78.4 m. Take g = 9.8 m s^{-2}. Use energy to find (a) the loss in potential energy (3 s.f.), (b) the speed of the particle after falling 78.4 m.	
7 Solve $-4\sin^2 x - 2\cos x + 2 = 0$ for $0° \leq x \leq 360°$.	
8 A golf ball is projected from level ground with velocity $(15\mathbf{i} + 29.4\mathbf{j})$ m s^{-1} ($\mathbf{i}$ horizontal, $\mathbf{j}$ vertically up). Take g = 9.8 m s^{-2}. (a) Find the time of flight. (b) Find the greatest height reached.	
9 The values x are coded using $y = (x - 20) \div 10$. The coded values have mean $\bar{y} = 3.2$ and standard deviation 1.1. Find the mean and standard deviation of x.	
10 Sketch $y = \lvert x^2 - 36 \rvert$. Write down the coordinates where the graph meets the axes and the coordinates of the local maximum point.	