Day 357	A Level Maths: C Tier 10-a-day
1 An arithmetic sequence begins $-1, 6, 13, 20, \ldots$ Find (a) an expression for the nth term, (b) the 32th term.	
2 A model relates the mass, m kg, of a puppy to its age, w weeks by $m = 1 + 1.1w$. Interpret the value 1 in this context.	
3 A car of mass 1500 kg is driven along a straight horizontal road by a driving force of 1525 N against a constant resistance of 400 N. Find the acceleration of the car.	
4 £250 invested at 4% compound interest per year. After how many whole years will it first exceed £750?	
5 $P(A) = 0.1$, $P(B) = 0.7$ and $P(A \cap B) = 0.01$. (a) Find $P(A \mid B)$. (b) Are A and B independent? Give a reason.	

Day 357	A Level Maths: C Tier 10-a-day
6 The velocity of a ball is $(-5\mathbf{i} + 12\mathbf{j})$ m s^{-1}, where $\mathbf{i}$ and $\mathbf{j}$ are perpendicular unit vectors. (a) Find the speed. (b) Find the acute angle between the direction of motion and the line of $\mathbf{i}$. Give 1 d.p.	
7 Differentiate with respect to x: (a) $3e^x + 2 \ln x$ (b) $3 \ln x$	
8 Find the sum of the first 6 terms of the geometric series $5 + 15 + 45 + ...$	
9 Find the gradient of the curve $y = (x^2 + 4)^4$ at the point where $x = 1$.	
10 The line $y = -4x + k$ is a tangent to the curve $y = x^2 + 1$. Find the value of k.	