Day 98	A Level Maths: C Tier 10-a-day
1 Find the sum of the first 9 terms of the geometric series $6 + 24 + 96 + ...$	
2 The values x are coded using $y = (x - 40) \div 4$. The coded values have mean $\bar{y} = 2.2$ and standard deviation 2.4. Find the mean and standard deviation of x.	
3 Two cyclists start at the same time from points A and B, 60 m apart, and cycle directly towards each other at constant speeds of 3 m s^{-1} and 7 m s^{-1}. Find the time until they meet.	
4 The vector $\mathbf{p} = -8\mathbf{i} - 6\mathbf{j}$. Find (a) $\lvert\mathbf{p}\rvert$, (b) the angle p makes with the positive x-axis, measured anticlockwise (1 d.p.).	
5 A line has parametric equations $x = 3t - 5$, $y = 2t + 2$. Find its equation in the form $y = mx + c$.	

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6 A train starts from rest and accelerates uniformly at 2 m s^{-2} for 6 s, then travels at constant speed for a further 30 s. Find the total distance travelled.	
7 The line $y = 3x + k$ is a tangent to the curve $y = x^2 - 3x - 4$. Find the value of k.	
8 Solve $-2\cos^2 x + \sin x + 2 = 0$ for $0° \leq x \leq 360°$.	
9 X ~ B(80, 0.5). Use a normal approximation to find P(X ≤ 36), to 3 s.f.	
10 The diagram shows the curve $y = \sqrt{x + 3}$ from x = 0 to x = 6 divided into 4 strips of equal width. Use the trapezium rule with these strips to estimate the shaded area to 3 s.f. 	