Day 304	A Level Maths: C Tier 10-a-day
1 When $x^3 + kx^2 + 3x$ is divided by $(x - 1)$, the remainder is 2. Find the value of k.	
2 Solve $\sin x = \frac{\sqrt{2}}{2}$ for $0° \leq x \leq 180°$.	
3 Seven daily rainfall readings (mm) from the Large Data Set are: 0, tr, 3.6, 0.2, 0.4, 1.8, tr. Here 'tr' means a trace, which is treated as 0. Find the mean daily rainfall to 3 s.f.	
4 $\mathbf{a} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} -6 \\ -12 \end{pmatrix}$. Show that a and b are parallel and find the ratio $\lvert\mathbf{b}\rvert : \lvert\mathbf{a}\rvert$.	
5 A train moving in a straight line with constant acceleration increases its speed from 8 m s^{-1} to 18 m s^{-1} in 7 s. Find the distance it travels in this time.	

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6 A fair die is rolled until a six appears. X is the number of rolls. Find P(X = 5), to 3 s.f.	
7 Find the sum of the first 6 terms of the geometric series 5 + 20 + 80 + ...	
8 Solve $\sin 2x = -\frac{1}{2}$ for $0° \leq x \leq 180°$.	
9 The line $y = 4x + k$ is a tangent to the curve $y = x^2 - 2x + 6$. Find the value of k.	
10 A car moves in a straight line with constant acceleration 2 m s^{-2}. Its initial speed is 4 m s^{-1}. Find the distance travelled in 6 s.	