Day 231	A Level Maths: C Tier 10-a-day
1 In an exam question, a string is described as light. State what this assumption means for the motion or forces in the model.	
2 Sketch $y = (x + 3)(x - 3)(x - 4)$. Write down the coordinates of the points where the curve meets the axes.	
3 A drone moves with constant velocity $(3\mathbf{i} - 4\mathbf{j})$ m s^{-1}. At time t = 0 its position vector is $(-3\mathbf{i} + 5\mathbf{j})$ m. (a) Find its position vector when t = 2. (b) Find the distance it travels in 2 s.	
4 An arithmetic series has first term 1 and common difference 6. Find the smallest n for which the sum of the first n terms exceeds 400.	
5 Of 60 people, 21 are women. 10 of the women and 16 of the men own a bike. One person is chosen at random. Given that the person is a woman, find the probability that they own a bike.	

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6 Given that $\log_2 x = p$, write the following in terms of p: (a) $\log_2 x^3$ (b) $\log_2 (4x)$	
7 8 pairs of data on daily mean temperature and sunshine hours have r = 0.67. Test, at the 5% significance level, for evidence of positive correlation. The critical value is 0.6215.	
8 A(−1, −2), B(3, −10) and C(6, k). Given that A, B and C are collinear, find k.	
9 $f(x) = (x + 1)^2 - 5$, $x \geq 0$. Find the range of f.	
10 θ is acute and $\cos\theta = \frac{7}{25}$. Find the exact values of $\sin\theta$ and $\tan\theta$.	