Day 199	A Level Maths: C Tier 10-a-day
1 A biased coin lands heads with probability 0.2. It is tossed 14 times. X is the number of heads. Find P(X = 1), giving your answer to 3 s.f.	
2 Find the remainder when $3x^3 + x^2 + 5x + 3$ is divided by $(x + 4)$.	
3 A particle has initial velocity $(\mathbf{i})$ m s^{-1} and constant acceleration $(-2\mathbf{i} + 4\mathbf{j})$ m s^{-2}. Find its velocity after 2 s.	
4 Solve $x^2 - 10x - 8 = 0$, giving your answers in the form $p \pm \sqrt{q}$.	
5 A(0, 0), B(3, −3) and C(5, −5). Show that A, B and C are collinear and find AB : BC.	

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6 A stone is projected from level ground with velocity $(14\mathbf{i} + 29.4\mathbf{j})$ 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 horizontal range.	
7 Solve $-4\cos^2 x - 6\sin x + 6 = 0$ for $0° \leq x \leq 360°$.	
8 The line $y = 3x + k$ is a tangent to the curve $y = x^2 - x - 3$. Find the value of k.	
9 $f(x) = x^2 - 3$. Use the Newton-Raphson method with $x_0 = 3$ to find x_1, giving your answer to 3 decimal places.	
10 In a histogram, the class 20 to 30 has frequency 20 and is drawn with a bar of height 3 cm. The class 30 to 35 has frequency 30. Find the height of its bar.	