Day 206	A Level Maths: B Tier 10-a-day
1 Prove that $(4n + 4)^2 - (4n - 4)^2$ is a multiple of 64 for all integer values of n.	
2 Solve $\sin x = -\frac{1}{2}$ for $0 \leq x \leq 360°$.	
3 A trolley of mass 4 kg is moving on a smooth horizontal surface at 0 m s^{-1} when a constant horizontal force of 15 N, in the direction of motion, acts for 4 s. Find the speed of the trolley at the end of this time and the distance it moves.	
4 Given that $\sin A = \frac{24}{25}$ and $\cos B = \frac{24}{25}$, where A is obtuse and B is acute, find the exact value of $\cos(A - B)$.	
5 For 14 pairs of data, $S_{xx} = 90$, $S_{yy} = 320$ and $S_{xy} = 91$. Find the PMCC (3 s.f.) and describe the correlation.	

Day 206	A Level Maths: B Tier 10-a-day
6 The function $f(x) = x^3 - 2x - 10$. Show that $f(x) = 0$ has a root between $x = 2$ and $x = 2.5$.	
7 Express $\frac{15 - 5\sqrt{5}}{\sqrt{5}}$ in the form $p + q\sqrt{5}$, where p and q are integers.	
8 A coin is thought to land heads with probability 0.2. It is tossed 30 times and lands heads 0 times. Test, at the 5% significance level, whether the probability of heads is different from 0.2.	
9 Find the set of values of x for which $5x - 3 \geq -1$ and $x^2 + x - 6 \geq 0$.	
10 A uniform rod AB of length 8 m and mass 10 kg hangs horizontally from two vertical strings attached 0.5 m from A and 0.5 m from B. A particle of mass 3 kg is attached 2 m from A. Take $g = 9.8$ m s^{-2}. Find the tension in each string.	