Day 142	A Level Maths: B Tier 10-a-day
1 Solve $-2x - 6 \geq x + 3$.	
2 Find (a) $\int 6e^{3x}\,dx$, (b) the exact value of $\int_0^1 6e^{3x}\,dx$.	
3 Each of 8 people independently supports a team with probability 0.6; X is the number of supporters. This is done 500 times. Estimate the number of times that X = 6.	
4 Evaluate $16^{-\frac{1}{4}}$.	
5 Given that $\sin A = \frac{24}{25}$ and $\sin B = \frac{8}{17}$, where A is obtuse and B is acute, find the exact value of cos(A + B).	

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6 A ball is thrown vertically upwards at 4.9 m s^{-1} from a point 98 m above horizontal ground. Take g = 9.8 m s^{-2}. Find the time before it hits the ground.	
7 Line l_1 has equation x + 7y = 3 and line l_2 has equation x + 4y = 0. The lines meet at P. Find the area of the triangle formed by l_1, l_2 and the x-axis.	
8 A coin is thought to land heads with probability 0.5. It is tossed 30 times and lands heads 11 times. Test, at the 5% significance level, whether the probability of heads is different from 0.5.	
9 A particle moves so that at time t s its velocity is v = $(3t^2 + 2)\mathbf{i} + (5t - 20)\mathbf{j}$ m s^{-1}. Find the time when the particle is moving in the direction of $\mathbf{i}$, and its speed then.	
10 Squares of side x cm are cut from the corners of a square card of side 48 cm and the sides are folded up to make an open box. Find x for the greatest volume, and that volume.	