Day 34	A Level Maths: B Tier 10-a-day
1 Solve $\cos x = \frac{\sqrt{3}}{2}$ for $0 \leq x \leq 360°$.	
2 (a) Write $3x^2 + 6x + 15$ in the form $a(x + p)^2 + q$. (b) Write down the coordinates of the minimum point of $y = 3x^2 + 6x + 15$.	
3 Solve $3^x = 42$, giving your answer to 3 s.f.	
4 X has a binomial distribution with mean 18.75 and variance 4.6875. (a) Find n and p. (b) Find P(X = 18) to 3 significant figures.	
5 A box of mass 4 kg is pulled along rough horizontal ground by a horizontal force of 15.76 N. It accelerates at 1 m s^{-2}. Take g = 9.8 m s^{-2}. Find the coefficient of friction between the box and the ground.	

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6 Solve $\log_5(x + 21) - \log_5(x - 3) = 2$.	
7 The circle C has equation $(x - 1)^2 + (y - 2)^2 = 100$. The point P(9, −4) lies on C. Find an equation of the tangent to C at P, in the form $ax + by + c = 0$ with integer a, b, c.	
8 Packet masses are normal, s.d. 5 g. Claimed mean 250 g; 50 packets have mean 250.9 g. Test at the 5% level whether the true mean is greater than 250.	
9 A particle moves in a straight line. At time t s its velocity is $v = 2t - t^2$ m s^{-1}, for $t \geq 0$. Find the maximum speed of the particle and the time at which it occurs.	
10 A circle has centre (−5, 3) and passes through the point (6, 6). Find an equation of the circle.	