Day 360	A Level Maths: B Tier 10-a-day
1 Solve $-x + 10 \leq x - 4$.	
2 A sector of a circle has radius 15 cm and angle 210°. Find, in terms of π, the arc length and the area of the sector.	
3 In the binomial expansion of $(1 + kx)^n$, where n is a positive integer, the coefficient of x is -24 and the coefficient of x^2 is 252. Find the values of n and k.	
4 Given that $y = (2x - 1) \ln x$, find $\frac{dy}{dx}$, and its value when $x = 1$.	
5 The random variable X has E(X) = 4 and Var(X) = 2. Find (a) $E(-3X + 3)$, (b) $Var(-3X + 3)$, (c) $E(X^2)$.	

Day 360	A Level Maths: B Tier 10-a-day
6 (a) Write $\frac{-x-7}{(x+4)(x+5)}$ in partial fractions. (b) Hence evaluate $\int_0^4 \frac{-x-7}{(x+4)(x+5)}\,dx$, giving the answer as a single logarithm.	
7 Solve $\|x-4\| = \|-3x-6\|$.	
8 A woman of mass 60 kg stands on weighing scales in a lift. The lift decelerates at 1.5 m s^{-2} while moving upwards. Take g = 9.8 m s^{-2}. Find the force exerted on the woman by the scales.	
9 The masses (kg) of parcels are normally distributed. P(X < 18) = 0.1587 and P(X > 48) = 0.0668. Find the mean and standard deviation (3 s.f.).	
10 A particle moves so that at time t s its velocity is $\mathbf{v} = (3t^2 + 3)\mathbf{i} + (3t - 3)\mathbf{j}$ m s^{-1}. Find the time when the particle is moving in the direction of $\mathbf{i}$, and its speed then.	