Day 55	A Level Maths: B Tier 10-a-day
1 Solve $-5x + 7 < 3x - 7$.	
2 Two forces of magnitude 7 N and 24 N act at right angles on a particle. Find the magnitude of the resultant, and the angle it makes with the 7 N force, to 1 d.p.	
3 A sector of a circle has radius 6 cm and angle 240°. Find, in terms of π, the arc length and the area of the sector.	
4 A circle has equation $x^2 + y^2 - 4x + 8y + 10 = 0$. Find the coordinates of its centre and its radius.	
5 Points A and B have position vectors $\begin{pmatrix} -2 \\ -1 \\ 5 \end{pmatrix}$ and $\begin{pmatrix} -10 \\ -9 \\ 9 \end{pmatrix}$. Find AB and the distance AB.	

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6 R: has the condition; L: test is positive. P(R) = 0.2, P(L | R) = 0.5, P(L | R') = 0.2. (a) Find P(L). (b) Find P(R | L).	
7 (a) Write $-2x^2 + 16x - 29$ in the form $a(x + p)^2 + q$. (b) Write down the coordinates of the maximum point of $y = -2x^2 + 16x - 29$.	
8 (a) Write $\frac{3x + 12}{(x + 2)(x + 5)}$ in partial fractions. (b) Hence evaluate $\int_0^4 \frac{3x + 12}{(x + 2)(x + 5)}\,dx$, giving the answer as a single logarithm.	
9 Particles A (6 kg) and B (9 kg) are joined by a light string over a smooth pulley. Both are held with the string taut, B is 0.5 m above the ground, then released. Take $g = 9.8$ m s^{-2}. Find the speed with which B hits the ground.	
10 The masses (kg) of parcels are normally distributed. P(X < 55) = 0.1587 and P(X > 65) = 0.1587. Find the mean and standard deviation (3 s.f.).	