Day 96	A Level Maths: C Tier 10-a-day
1 The curve $y = 7x - x^2$ and the line $y = 2x$ meet at the origin and at P. Find the area enclosed between them.	
2 The line l has equation $y = -4x - 5$. Find the equation of the line perpendicular to l that passes through $(5, -1)$.	
3 A reporter asks the first 20 people who walk out of a hospital for their views. Name the sampling method used.	
4 Evaluate $\int_0^2 (x^2 + 4)\,dx$.	
5 Find the set of values of k for which $x^2 + kx + 36 = 0$ has two distinct real roots.	

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6 The continuous random variable X has probability density function $f(x) = k(x + 1)$ for $0 \leq x \leq 1$, and 0 otherwise.
Find the value of k.

7 Given that $\frac{dy}{dx} = \frac{x}{y}$ and $y = 2$ when $x = 0$, find y^2 in terms of x.

8 A ball is projected from level ground with velocity $(14\mathbf{i} + 19.6\mathbf{j})$ m s^{-1} ($\mathbf{i}$ horizontal, $\mathbf{j}$ vertically up). Take $g = 9.8$ m s^{-2}.
(a) Find the time of flight.
(b) Find the horizontal range.

9 Solve the simultaneous equations:
$y = x^2 + 6x - 9$, $y = 3x - 5$.

10 The graph shows the velocity of a car over 46 seconds as it moves in a straight line.
(a) Find its acceleration in the first 10 s.
(b) Find the total distance travelled.

