Day 335	A Level Maths: B Tier 10-a-day
1 A sector of a circle has area 101.25 cm^2 and angle 0.9 radians. Find (a) the radius, (b) the perimeter of the sector.	
2 A car of mass 1000 kg moves along a horizontal road. The engine works at a constant rate of 36 kW. The resistance to motion is constant at 600 N. Find the acceleration when the speed is 20 m s^{-1}.	
3 The points A and B have coordinates (3, 6) and (−5, 7). (a) Find the midpoint of AB. (b) Find the line AB as ax + by + c = 0, with integer a, b, c.	
4 Marks are normal: Maths $N(55, 10^2)$, Physics $N(65, 12^2)$. Anna scores 50 in Maths and 74 in Physics. Which is her better performance, relatively?	
5 Given that $\sin A = \frac{4}{5}$ and $\cos B = \frac{8}{17}$, where A and B are acute, find the exact value of sin(A + B).	

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6 $f(x) = 3x^2 + 18x + 34$ for $x \geq -3$. Find $f^{-1}(x)$ and state its domain.	
7 A particle moves along a straight line so that its displacement from O after t s is $s = t^3 + 3t^2$ metres. Find (a) the average velocity over the first 4 seconds, (b) the velocity at t = 4.	
8 Find the term independent of x in the expansion of $(3x + \frac{2}{x})^6$.	
9 Solve $4\cos^2 x - \sin x - 4 = 0$ for $0 \leq x \leq 360°$, giving answers to 1 d.p. where necessary.	
10 The random variable X is normally distributed. $P(X < 40) = 0.1587$ and $P(X > 60) = 0.1587$. Find the mean and standard deviation (3 s.f.).	