Day 363	A Level Maths: C Tier 10-a-day
1 M(5, 10) is the midpoint of the line segment AB. A is the point (2, 5). Find the coordinates of B.	
2 Solve $5^{x+3} = 200$. Give your answer to 3 significant figures.	
3 Find the remainder when $-x^3 - 2x^2 - 7x + 1$ is divided by $(x + 2)$.	
4 A stone is dropped from rest from the top of a building of height 78.4 m. Take $g = 9.8$ m s^{-2} and ignore air resistance. Find (a) the time taken to reach the ground, (b) its speed on hitting the ground.	
5 A(3, 2), B(6, −1) and C(11, −6). Show that A, B and C are collinear and find AB : BC.	

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6 Here are 5 values: 19, 11, 9, 14, 2 Find the mean and the standard deviation, to 3 s.f.	
7 The line $y = -2x + k$ is a tangent to the curve $y = x^2 - 4x$. Find the value of k.	
8 $\frac{6x + 16}{(x + 2)(x + 3)} \equiv \frac{A}{x + 2} + \frac{B}{x + 3}$. Find A and B, and hence find $\int \frac{6x + 16}{(x + 2)(x + 3)}\, dx$.	
9 Two forces (0) N and $(8\mathbf{i} + 4\mathbf{j})$ N act on a particle of mass 4 kg. No other horizontal forces act. Find the acceleration of the particle as a vector in terms of $\mathbf{i}$ and $\mathbf{j}$.	
10 $X \sim B(10, p)$. H_0: $p = 0.1$, H_1: $p > 0.1$. In a sample, $x = 3$. It is given that $P(X \geq 3) = 0.0702$. Test H_0 at the 10% significance level.	