Day 41	A Level Maths: C Tier 10-a-day
1 Here are 7 values: 17, 10, 5, 13, 10, 18, 13 Find the mean and the standard deviation, to 3 s.f.	
2 $f(x) = 4x - 2$ and $g(x) = x^2 + 1$. Find (a) $fg(x)$, (b) $gf(x)$.	
3 A car decelerates uniformly from 24 m s^{-1} to rest in 6 s. Find (a) the deceleration, (b) the distance travelled while decelerating.	
4 A sector has radius 5 cm and area 15.0 cm^2. Find the angle of the sector in radians and the arc length.	
5 20 pairs of data on age of a car and its value have r = 0.45. Test, at the 5% significance level, for evidence of positive correlation. The critical value is 0.3783.	

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6 A geometric sequence begins 128, 192, 288, ... Find the common ratio and the 8th term.	
7 Express $24 \sin x + 7 \cos x$ in the form $R \cos(x - \alpha)$, where $R > 0$ and $0° < \alpha < 90°$. Give α to 1 decimal place.	
8 A particle slides down a rough plane inclined at angle α to the horizontal, where $\sin \alpha = \frac{3}{5}$ and the coefficient of friction is 0.25. Take $g = 9.8$ m s^{-2}. Find the acceleration.	
9 When $x^3 + kx^2 - 3x + 39$ is divided by $(x + 3)$, the remainder is 3. Find the value of k.	
10 $f(x) = 5 \sin x + 12 \cos x + 3$. Write f(x) in the form $R \sin(x + \alpha) + 3$, with α in degrees to 1 d.p., and state the maximum value of f(x).	