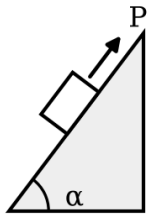
Day 235	A Level Maths: C Tier 10-a-day
1 A list of 270 customers is used. A random starting name in the first 5 is chosen, then every 5th name after it. Name the sampling method used.	
2 Solve $\log_3 (2x + 1) = 2$.	
3 A particle of mass 15 kg rests on a smooth plane inclined at α to the horizontal, where $\tan \alpha = \frac{4}{3}$. It is held by a force P N up the slope. Take g = 9.8 m s^{-2}. Find P and the normal reaction. 	
4 Find the exact value of $\int_0^{\frac{\pi}{8}} 12 \cos 4x \, dx$.	
5 Two forces $(3\mathbf{i} + 3\mathbf{j})$ N and $(-\mathbf{i} - 7\mathbf{j})$ N act on a particle of mass 2 kg. No other horizontal forces act. Find the acceleration of the particle as a vector in terms of $\mathbf{i}$ and $\mathbf{j}$.	

Day 235	A Level Maths: C Tier 10-a-day
6 $f(x) = x^3 - 4x^2 - 9x + 36$ (a) Show that $(x - 3)$ is a factor of $f(x)$. (b) Factorise $f(x)$ completely.	
7 $\frac{x+1}{(x+3)(x+2)} \equiv \frac{A}{x+3} + \frac{B}{x+2}$. Find A and B, and hence find $\int \frac{x+1}{(x+3)(x+2)}\,dx$.	
8 The equation $x^2 + 2x + c = 0$ has equal roots. Find the value of c.	
9 The table shows grouped data. Class: $10 \leq x < 20$; $20 \leq x < 30$; $30 \leq x < 40$; $40 \leq x < 50$ Frequency: 9, 6, 4, 2 Estimate the mean, to 3 s.f.	
10 The curve $y = x^2 + x - 2$ is translated by the vector $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$. Find the equation of the new curve, giving your answer in the form $y = ax^2 + bx + c$.	