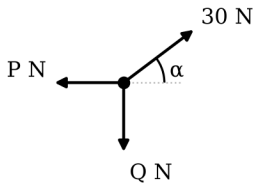
Day 12	A Level Maths: C Tier 10-a-day
1 The vector p = 5**i** + 12**j**. Find (a) |p|, (b) the angle p makes with the positive x-axis, measured anticlockwise (1 d.p.).	
2 The 40 residents are numbered. A computer generates 15 different random numbers and those people are asked to take part. Name the sampling method used.	
3 A light plank rests on a pivot. A child of mass 40 kg sits 1 m from the pivot on one side. Where must a child of mass 25 kg sit on the other side for the plank to balance horizontally?	
4 $X \sim N(115, 6^2)$. Given that $P(X > a) = 0.75$, find a to 3 s.f.	
5 A particle is in equilibrium under the three forces shown. $\cos\alpha = \frac{4}{5}$. Find P and Q. 	

Day 12	A Level Maths: C Tier 10-a-day
6 Sketch $y = 2 \times 5^x - 10$. Write down the equation of the asymptote and the coordinates where the curve meets the axes.	
7 The volume of a sphere increases at 16 cm^3/s. Find the rate of increase of the radius when r = 4. Give your answer to 3 s.f.	
8 Prove that the sum of three consecutive integers is a multiple of 3.	
9 A rectangle has perimeter 20 cm. Find the maximum possible area of the rectangle and the dimensions that give it.	
10 Expand $(1 + 4x)^{\frac{1}{2}}$ in ascending powers of x up to and including the term in x^2. State the range of values of x for which the expansion is valid.	