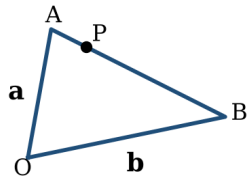
Day 189	A Level Maths: C Tier 10-a-day
1 Divide $f(x) = 2x^3 + 10x^2 + 9x - 1$ by $(x + 3)$. Find the quotient and the remainder.	
2 A has coordinates $(3, -2, 2)$ and B has coordinates $(-8, -4, 12)$. Find (a) the vector AB, (b) the distance AB, (c) the midpoint of AB.	
3 An arithmetic sequence begins 9, 15, 21, 27, ... Find (a) an expression for the nth term, (b) the 20th term.	
4 $\mathbf{a} = -2\mathbf{i} - \mathbf{k}$ and $\mathbf{b} = \mathbf{i} + 2\mathbf{j} - 3\mathbf{k}$. Find the angle between a and b, to 1 decimal place.	
5 A lift of mass 200 kg is lowered by a vertical cable with constant acceleration 1.5 m s^{-2} downwards. Take g = 9.8 m s^{-2}. Find the tension in the cable.	

Day 189 **A Level Maths: C Tier 10-a-day**

6 In the diagram, OA = **a**, OB = **b**, and P lies on AB with AP : PB = 1 : 4.
Find AB and AP in terms of **a** and **b**.



7 Express $\frac{2x + 3}{(x - 3)^2}$ in the form $\frac{A}{(x - 3)} + \frac{B}{(x - 3)^2}$.

8 X is the number of days in a 20 day period when it rains, where rain is more likely after a rainy day.
Can X be modelled by a binomial distribution?
Give a reason.

9 A boat moving in a straight line increases its speed from 8 m s^{-1} to 20 m s^{-1} with constant acceleration 3 m s^{-2}. Find the time taken.

10 Of 130 people, 49 are women. 23 of the women and 48 of the men walk to work.
One person is chosen at random.
Given that the person is a woman, find the probability that they walk to work.