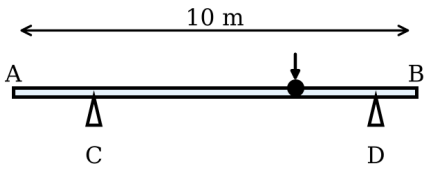
Day 257	A Level Maths: B Tier 10-a-day
1 (a) Write $3x^2 - 6x$ in the form $a(x + p)^2 + q$. (b) Write down the coordinates of the minimum point of $y = 3x^2 - 6x$.	
2 R: it rains; L: Ali is late. P(R) = 0.6, P(L | R) = 0.3, P(L | R') = 0.3. (a) Find P(L). (b) Find P(R | L).	
3 A particle has velocity $(-5\mathbf{i} - 2\mathbf{j})$ m s^{-1} at time t = 0 and moves with constant acceleration $(\mathbf{i} + 3\mathbf{j})$ m s^{-2}. Find its velocity and speed when t = 2.	
4 (a) Show that $x^2 - x - 2 = 0$ can be written as $x = \sqrt{x + 2}$. (b) Use $x_{n+1} = \sqrt{x_n + 2}$ with $x_0 = 3$ to find x_1, x_2, x_3 to 4 d.p.	
5 The curve C has equation $y = x^3 - 2x^2 + x + 3$. C is stretched by scale factor 2 parallel to the y-axis. Find its new equation.	

Day 257	A Level Maths: B Tier 10-a-day

6 Express $4\cos\theta + 3\sin\theta$ in the form $R\cos(\theta - \alpha)$, where $R > 0$ and $0 < \alpha < 90°$. Give α to 1 d.p.

7 A uniform beam AB of length 10 m and mass 10 kg rests horizontally on supports at C and D, where AC = 2 m and BD = 1 m.
A particle of mass 10 kg is placed on the beam 3 m from B. Take $g = 9.8$ m s^{-2}.
Find the reactions at C and D.



8 The scores on a test are normally distributed.
$P(X < 35) = 0.1587$ and $P(X > 50) = 0.0228$.
Find the mean and standard deviation (3 s.f.).

9 The circle C has equation $(x + 2)^2 + (y - 3)^2 = 20$.
The point $P(-6, 5)$ lies on C.
Find an equation of the tangent to C at P, in the form $ax + by + c = 0$ with integer a, b, c.

10 A sector of a circle has radius 13 cm and arc length 23.4 cm.
Find (a) the angle of the sector in radians, (b) the area of the sector.