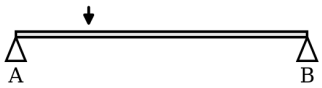
Day 224	A Level Maths: C Tier 10-a-day
1 Classify each variable as qualitative, discrete or continuous. (a) a person's favourite colour (b) the height of a plant (c) the eye colour of a pupil	
2 Find the exact value, in radians, of (a) $\arctan(-1)$ (b) $\arccos(-1)$	
3 For a data set $Q_1 = 10$ and $Q_3 = 24$. A value is an outlier if it is more than 1.5 × IQR above Q_3 or below Q_1. Determine whether -9 and -10 are outliers.	
4 $\frac{-4x-10}{(x+4)(x+1)} \equiv \frac{A}{x+4} + \frac{B}{x+1}$. Find A and B, and hence find $\int \frac{-4x-10}{(x+4)(x+1)}\,dx$.	
5 Sketch $y = \lvert 2x + 3 \rvert$. Write down the coordinates of the vertex and of the point where the graph meets the y-axis.	

Day 224	A Level Maths: C Tier 10-a-day
6 A uniform beam AB of mass 15 kg and length 10 m rests horizontally on supports at A and B. A load of mass 20 kg is placed on the beam 2.5 m from A. Take g = 9.8 m s^{-2}. Find the reaction at B.  	
7 Find the set of values of x satisfying both $2x - 5 > -13$ and $x^2 + 8x + 12 < 0$.	
8 A train's engine works at a constant rate of 12 kW. Find the driving force when the vehicle is moving at 8 m s^{-1}.	
9 The line $y = 2x + k$ is a tangent to the curve $y = x^2 + 6x - 1$. Find the value of k.	
10 Use a double angle formula to find $\int \cos^2 2x \, dx$.	