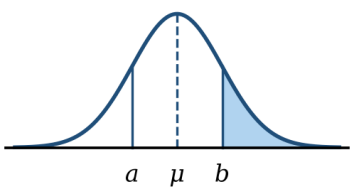
Day 218	A Level Maths: C Tier 10-a-day
1 Write down the exact value of sin 30°.	
2 Simplify $\sqrt{6} \times \sqrt{3}$, giving your answer in the form $p\sqrt{q}$, or as an integer.	
3 A runner travels 6 m at a constant speed of 3 m s^{-1}, then a further 15 m at a constant speed of 5 m s^{-1}. Find the average speed for the whole journey.	
4 Describe the single transformation that maps the graph of y = f(x) onto the graph of y = f(x + 2).	
5 The diagram shows the density of X ~ N(130, 4^2). a and b are equal distances from the mean. The shaded area, P(X > b), is 0.34. Find P(a < X < b).  	

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6 OA = $\begin{pmatrix}0\\5\\1\end{pmatrix}$ and OB = $\begin{pmatrix}-7\\11\\7\end{pmatrix}$. Find AB and |AB|, and a unit vector in the direction of AB.	
7 When $x^3 + kx^2 - x + 4$ is divided by $(x + 1)$, the remainder is -1. Find the value of k.	
8 Car P passes a point O at constant speed 16 m s^{-1}. At that instant car Q starts from rest at O with constant acceleration 4 m s^{-2} in the same direction. Find the time when Q catches up P.	
9 The probability that a machine is set up wrongly is 0.3. If so, the probability that an item is faulty is 0.5; otherwise it is 0.2. Given that an item is faulty, find the probability that a machine is set up wrongly.	
10 In the diagram, OA = **a**, OB = **b**, and P lies on AB with AP : PB = 4 : 1. Find AB and OP in terms of **a** and **b**. 