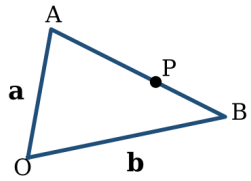
Day 134	A Level Maths: C Tier 10-a-day
1 (a) Convert $\frac{\pi}{6}$ radians to degrees. (b) Convert 40° to radians, giving your answer in terms of π.	
2 A company says that the probability a customer buys a ticket is 0.5. A researcher believes that the probability is higher. Let p be the probability that customer buys a ticket. Write down suitable hypotheses for a test on p.	
3 $a = \begin{pmatrix} 5 \\ 1 \end{pmatrix}$ and $b = \begin{pmatrix} -15 \\ -3 \end{pmatrix}$. Show that a and b are parallel and find the ratio $\lvert b \rvert : \lvert a \rvert$.	
4 Find the first four terms, in ascending powers of x, of the expansion of $(1 - 2x)^6$.	
5 Here are 6 values: 10, 19, 11, 12, 2, 3 Find the mean and the standard deviation, to 3 s.f.	

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6 In the diagram, OA = $\mathbf{a}$, OB = $\mathbf{b}$, and P lies on AB with AP : PB = 3 : 2.
Find AB and OP in terms of $\mathbf{a}$ and $\mathbf{b}$.



7 Solve $x^2 - 6x < 0$.

8 Car P passes a point O at constant speed 8.25 m s^{-1}.
At that instant car Q starts from rest at O with constant acceleration 1.5 m s^{-2} in the same direction. Find the time when Q catches up P.

9 Sketch $y = \frac{-4}{x + 3} + 4$.
Write down the equations of the asymptotes and the coordinates where the curve meets the axes.

10 Two cyclists start at the same time from points P and Q, 144 m apart, and cycle directly towards each other at constant speeds of 6 m s^{-1} and 10 m s^{-1}. Find the time until they meet.