Day 339	S Tier 10-a-day
1 The population of a town grows by 5% each year. After 3 years the population is 11,576. Work out the population 3 years ago. (Calculator)	
2 Write these numbers in order of size, starting with the smallest. 0.35, 39%, $\frac{1}{3}$, $\frac{7}{13}$	
3 Priya invests £7,500. The rates of interest for the next 3 years are 2%, 3% and 5%. Compound interest is paid. Work out the value of the investment after 3 years. Give your answer to the nearest penny. (Calculator)	
4 Simplify fully $\frac{5x^2 - 180}{x^2 - 8x + 12}$	
5 $\mathbf{a} = \begin{pmatrix} 6 \\ 5 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$ and $\mathbf{c} = \begin{pmatrix} 2 \\ 2 \end{pmatrix}$ $\mathbf{a} + k\mathbf{b}$ is parallel to $\mathbf{c}$. Work out the value of k.	

Day 339 **S Tier 10-a-day**

6 Show that $\frac{5}{3x-5} + \frac{x+3}{2x-1}$ can be written as $\frac{3x^2+14x-20}{(3x-5)(2x-1)}$

7 The HCF of two numbers is 5 and their LCM is 275.
One of the numbers is 25.
Work out the other number.

8 A rectangle has area $(14 + 10\sqrt{2})$ cm^2 and length $(2 + 2\sqrt{2})$ cm.
Find the width of the rectangle.
Give your answer in the form $a + b\sqrt{2}$

9 The 3rd term of a geometric sequence is 162.
The 5th term of the sequence is 1458.
All the terms of the sequence are positive.
(a) Work out the common ratio.
(b) Work out the first term.

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 1 : 3. N is on OB with ON : NB = 1 : 2. AN and BM intersect at X.
(a) Find BM in terms of **a** and **b**.
(b) Find OX in terms of **a** and **b**.
The diagram is not drawn accurately.

