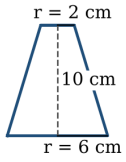
Day 349 **IGCSE 10-a-day**

1 The mean of 5 numbers is 10.4.
A new number is added and the mean of all 6 numbers is 12.5.
Work out the new number.

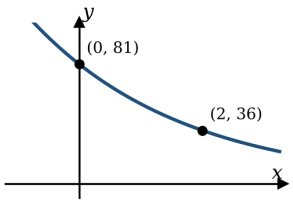
2 $\mathbf{a} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} -2 \\ -2 \end{pmatrix}$ and $\mathbf{c} = \begin{pmatrix} -16 \\ -6 \end{pmatrix}$.
$\mathbf{c} = m\mathbf{a} + n\mathbf{b}$.
Find the value of m and the value of n.

3 The line L has equation $8x + 15y = 120$.
L crosses the x-axis at the point A and the y-axis at the point B.
(a) Find the coordinates of A and B.
(b) Work out the length of AB.

4 A cone is cut parallel to its base to make a smaller cone and a frustum.
The frustum has height 10 cm, top radius 2 cm and base radius 6 cm.
Work out the volume of the frustum. Give your answer in terms of π.



5 $y = -x^3 - 3x^2 + 9x + 1$
At the point where $x = -1$, is the curve increasing or decreasing? You must show your working.

Day 349	IGCSE 10-a-day
6 Priya puts £3,000 in a savings account. Compound interest is paid at 6% in year 1, 5% in year 2 and 6% in year 3. Work out the amount in the account at the end of year 3. Give your answer to the nearest penny. (Calculator)	
7 The curve $y = 2x^3 - 3x^2 - 12x + 1$ has two stationary points, A and B. Work out the vertical distance between A and B.	
8 The diagram shows part of the graph of $y = ab^x$. The curve passes through (0, 81) and (2, 36). (a) Find the values of a and b. (b) Work out the value of y when x = 4. 	
9 A population is increased by x% in one year and then increased by a further x% the next year. Over the two years the population increases by 21%. Work out the value of x.	
10 $y = -2x^4 + 4x^2 + 2$ Find the coordinates of the stationary points of the curve and determine the nature of each.	