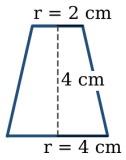
Day 103	IGCSE 10-a-day
1 Work out $(4\frac{3}{5} + 3\frac{1}{3}) \div 2\frac{1}{3}$ Give your answer as a mixed number or a fraction in its simplest form.	
2 A company makes and sells x thousand items. All amounts are in thousands of pounds. The revenue is $R = x(28 - 2x)$ and the cost is $C = 21 + 4x$. (a) Show that the profit $P = R - C$ is $P = -2x^2 + 24x - 21$. (b) Find the number of items that must be sold for the profit to be a maximum, and this maximum profit.	
3 Factorise fully $2x^3 - 72x$	
4 $A = \begin{pmatrix} 3 & -3 \\ 3 & -3 \end{pmatrix}$ and $B = \begin{pmatrix} -4 & 3 \\ 5 & -4 \end{pmatrix}$. Work out $A^2 - B^2$.	
5 A curve has equation $y = x^3 - 6x^2 + 14x - 1$. Find the equations of the two tangents to the curve that are parallel to the line $y = 5x + 5$.	

Day 103 **IGCSE 10-a-day**

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



7 $M = \begin{pmatrix} -2 & -1 \\ 1 & 4 \end{pmatrix}$.
(a) Find M^{-1}.
(b) Use your answer to (a) to solve
$-2x - y = -7$
$x + 4y = 7$

8 $y = 5x + \frac{20}{x}$
Find the values of x for which y is increasing.

9 The area of a square is 210 cm^2, correct to the nearest cm^2.
Work out the lower bound of the side length of the square.
Give your answer correct to 3 significant figures. (Calculator)

10 A bag contains some sweets. 9 of them are red and the rest are yellow.
Two sweets are taken at random without replacement.
The probability that both are red is $\frac{4}{17}$.
Work out how many sweets are yellow.