Day 351	IGCSE 10-a-day
1 The mean of 10 numbers is 28. One number is removed and the mean of the remaining 9 numbers is 30. Work out the number that was removed.	
2 Two curves have equations $y = 2x^2 + 2x$ and $y = 3x^2 + 8x + 2$. Find the value of x at which the curves have the same gradient.	
3 The interior angles of a pentagon are $x°$, $(x + 40)°$, $(2x + 15)°$, $(2x - 15)°$, $(x + 10)°$ (a) Work out the value of x. (b) Work out the size of the largest angle.	
4 (a) Write $x^2 + 12x + 39$ in the form $(x + p)^2 + q$ (b) Write down the coordinates of the turning point of the curve $y = x^2 + 12x + 39$	
5 $\mathbf{p} = \begin{pmatrix} -4 \\ -5 \end{pmatrix}$, $\mathbf{q} = \begin{pmatrix} -4 \\ -6 \end{pmatrix}$ and $\mathbf{r} = \begin{pmatrix} -6 \\ -3 \end{pmatrix}$. Work out $\mathbf{p} + 2\mathbf{q} - \mathbf{r}$.	

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6 A curve has equation $y = -x^2 + \frac{6}{x}$. Find the equation of the tangent to the curve at the point where $x = -2$.	
7 Hassan changes £1200 into euros at £1 = €1.3. Hassan spends €1180 and then changes the rest back into pounds at £1 = €1.6. How many pounds does Hassan get back?	
8 A car is worth £2,000 when new. Its value decreases by 10% each year. After how many whole years will it first be worth less than £500? (Calculator)	
9 An open tray has a square base of side x cm and height h cm. The total outside surface area is 108 cm^2. (a) Show that the volume of the box is $V = \frac{1}{4}(108x - x^3)$ cm^3. (b) Find the maximum volume of the box, proving that it is a maximum.	
10 In quadrilateral ABCD, AB = 14 cm, BC = 6 cm, CD = 14 cm, angle ABC = 89° and angle ACD = 49°. Work out the area of ABCD. Give your answer correct to 3 significant figures. (Calculator)  	