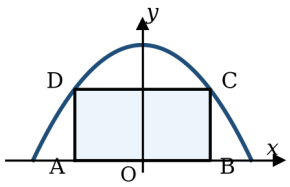
Day 177	IGCSE 10-a-day
1 $y = -2x^3 + 6x^2 - 8$ Find the range of values of x for which y is decreasing.	
2 Write $\sqrt{252} + \sqrt{112} + \sqrt{63}$ in the form $a\sqrt{7}$ where a is an integer.	
3 Here are five numbers: $2x - 1$, x, $2x + 2$, $x - 1$, $x + 3$. The mean of the five numbers is 9. (a) Work out the value of x. (b) Work out the range of the five numbers.	
4 $y = x^3 - 9x^2 + 24x + 9$ (a) Find the coordinates of the stationary points. (b) Use $\frac{d^2y}{dx^2}$ to decide whether each is a maximum or a minimum.	
5 Work out the square root of 2.56×10^{-8}. Give your answer in standard form.	

Day 177	IGCSE 10-a-day
6 A metal pipe is a hollow cylinder of length 30 cm. (Calculator) The outer radius is 10 cm and the inner radius is 9.5 cm. The density of the metal is 11.3 g/cm^3. Work out the mass of the pipe. Give your answer in kilograms correct to 3 significant figures.	
7 $f(x) = \frac{7}{x-4} - 5$ (a) Find $f^{-1}(x)$. (b) Find the value of $f^{-1}(2)$.	
8 A rectangle has area 50 cm^2, correct to 2 significant figures. Its length is 7.40000000000000035527136788005009293556213378906 25 cm, correct to 2 significant figures. Work out the upper bound of the width of the rectangle. Give your answer correct to 3 significant figures. (Calculator)	
9 The diagram shows the curve $y = 54 - 2x^2$. Rectangle ABCD has A, B on the x-axis and C, D on the curve. B is (x, 0). (a) Show that the area of ABCD is $-4x^3 + 108x$. (b) Find the maximum area of ABCD, showing that it is a maximum. 	
10 p = 13.2 and r = 5.6, each correct to 1 decimal place. q = 3.67, correct to 2 decimal places. Work out the lower bound of $\frac{p-q}{r}$. Give your answer correct to 3 significant figures. (Calculator)	