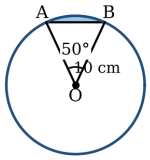
Day 77	IGCSE 10-a-day
1 $f(x) = 5x^3 + 4x - 3$ (a) Find $f'(x)$. (b) Work out the value of $f'(1)$.	
2 Work out the exact value of $\cos 60° - \cos 30°$. Give your answer in its simplest form, with no decimals.	
3 A curve has equation $y = x^3 - 9x^2 + 29x + 3$. Find the minimum value of the gradient of the curve, and the value of x at which it occurs.	
4 F is directly proportional to the cube of s. When s = 6, F = 108. (a) Find a formula for F in terms of s. (b) Find the value of s when F = 171.5.	
5 Make u the subject of $v = 2u^3 + 6$	

Day 77 **IGCSE 10-a-day**

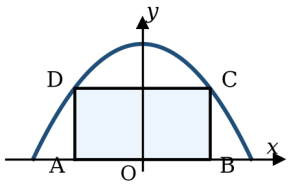
6 The circle has centre O and radius 10 cm. A and B are points on the circle and angle AOB = 50°. (Calculator)
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.
The diagram is not drawn accurately.



7 $f(x) = 4x - 2$ and $g(x) = x^2 + 2$
Solve $fg(x) = gf(x)$

8 The brightness of a lamp is inversely proportional to the square of the distance from the lamp.
The distance from the lamp is increased by 25%.
Work out the percentage change in the brightness of a lamp.

9 The diagram shows the curve $y = 150 - 2x^2$.
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 $-4x^3 + 300x$.
(b) Find the maximum area of ABCD, showing that it is a maximum.



10 Show that $\sqrt{23 + 8\sqrt{7}} = 4 + \sqrt{7}$