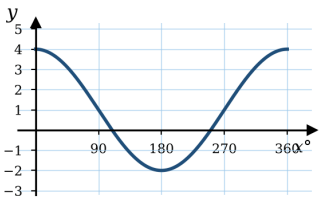
Day 257	IGCSE 10-a-day
1 In triangle PQR, side QR is extended to S. Angle QPR = $(2x - 10)°$ Angle PQR = $(3x + 10)°$ Angle PRS = $(4x + 26)°$ (a) Work out the value of x. (b) Work out the size of angle PRQ.	
2 Simplify fully $\frac{2\sqrt{112}}{3\sqrt{7}}$	
3 $f(x) = 2x + 5$ and $g(x) = x^2 - 6$. (a) Find fg(x). (b) Find gf(x).	
4 15 painters can paint a hall in 24 days. After 4 days, 5 of the painters leave. The rest carry on working at the same rate. How many more days does it take to finish?	
5 $y = \frac{(x + 3)^2}{x}$ $(x \neq 0)$ (a) Show that $\frac{dy}{dx} = \frac{(x - 3)(x + 3)}{x^2}$. (b) Find the gradient when $x = -2$.	

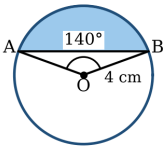
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6 The diagram shows the graph of $y = a \cos bx° + c$ for $0 \leq x \leq 360$.
a, b and c are integers.
Find the values of a, b and c.



7 The point A lies on the curve $y = x^2 - x + 3$ where $x = 2$.
Find the equation of the normal at A. Give your answer in the form $ax + by + c = 0$ where a, b and c are integers.

8 The circle has centre O and radius 4 cm. A and B are points on the circle and angle AOB = 140°. (Calculator)
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.
The diagram is not drawn accurately.



9 The curve $y = x^3 + 3x^2 - 9x + 2$ has two stationary points, A and B.
Work out the vertical distance between A and B.

10 The line $y = 3x + k$ is a tangent to the curve $y = 2x^2 + x + 2$.
Find the value of k.