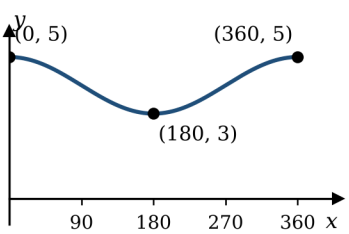
Day 166	IGCSE 10-a-day
1 Find $\frac{dy}{dx}$ when $y = 6x^4 - 3x^2 - 5x$	
2 Solve $\frac{x-1}{5} + \frac{x-3}{2} = -1$	
3 The 5-digit number 37k44 is a multiple of 3. k is a single digit. Find all the possible values of k.	
4 Kira changes £200 into euros at £1 = €1.35. Kira spends €130 and then changes the rest back into pounds at £1 = €1.6. How many pounds does Kira get back?	
5 The diagram shows the graph of $y = a \cos x° + c$ for $0 \leq x \leq 360$. Some points on the graph are labelled. Find the value of a and the value of c. 	

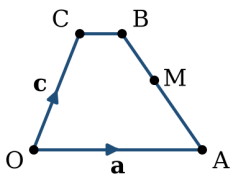
Day 166	IGCSE 10-a-day

6 A curve has equation $y = ax^2 + \frac{b}{x}$, where a and b are constants.
The point (1, 5) lies on the curve and the gradient of the curve at this point is 1.
Find the values of a and b.

7 The nth term of a sequence is $n^2 + 8n - 1$.
(a) Work out the 11th term.
(b) One term of the sequence is 344. Work out the value of n for this term.

8 A circle has equation $x^2 + y^2 = 841$.
The point P(−21, 20) lies on the circle.
(a) Find the equation of the tangent to the circle at P. Give your answer in the form ax + by = c, where a, b and c are integers.
(b) The tangent meets the x-axis at the point T.
Write down the coordinates of T.

9 OABC is a trapezium. OA is parallel to CB and CB = $\frac{1}{4}$OA.
$\mathbf{OA} = \mathbf{a}$ and $\mathbf{OC} = \mathbf{c}$.
(a) Find $\mathbf{AB}$ in terms of $\mathbf{a}$ and $\mathbf{c}$.
(b) AM : MB = 3 : 2. Find $\mathbf{OM}$.



10 The curve $y = 2x^3 + 9x^2 + 12x + 3$ has two stationary points, A and B.
Work out the vertical distance between A and B.