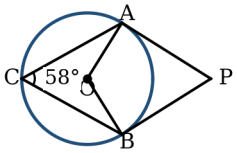
Day 122	IGCSE 10-a-day
1 Work out the value of $(p - q)^2 - (p + q)^2$ when $p = -4$, $q = -4$ and $r = -1$.	
2 $f(x) = 5x - 7$ and $g(x) = 2x^2 - x - 4$. Work out $ff(4) + gf(3)$.	
3 PA and PB are tangents to a circle, centre O. C is a point on the circle. Angle ACB = 58°. (a) Work out the size of angle AOB. (b) Work out the size of angle APB. The diagram is not drawn accurately. 	
4 The function $f(x) = x^2 + 8x + 6$ is increasing when $x > k$. Find the value of k.	
5 Uma spent $\frac{1}{7}$ of her money on a phone. She then spent $\frac{1}{3}$ of the money that was left on a case. A case cost £120. How much money did Uma have to start with?	

Day 122	IGCSE 10-a-day
6 $y = -x^3 - 6x^2 + 9x + 4$ (a) Find $\frac{d^2y}{dx^2}$. (b) Find the value of x for which $\frac{d^2y}{dx^2} = 0$, and work out the gradient of the curve at this value of x.	
7 The lengths of the sides of a right-angled triangle are $(x - 1)$ cm, $(x + 1)$ cm and $(x + 3)$ cm. The longest side is $(x + 3)$ cm. (a) Show that $x^2 - 6x - 7 = 0$ (b) Hence work out the area of the triangle.	
8 The graph of $y = f(x)$ has a maximum point at (5, 3). Write down the coordinates and the type of turning point on each graph. (a) $y = f(-x)$ (b) $y = -f(x)$	
9 A piece of thin metal rod 140 cm long is cut into two pieces. One piece is bent to form a square of side x cm. The other piece is bent to form a rectangle whose length is three times its width. (a) Show that the total area, A cm^2, enclosed by the two shapes is $A = x^2 + \frac{3(140 - 4x)^2}{64}$. (b) Find the value of x for which A is least, and work out this least area.	
10 The Venn diagram shows how many of 37 students play the piano (P) or the guitar (G). (a) Work out the value of x. (b) A student is chosen at random from those who play the guitar. Work out the probability that this student also plays the piano. 