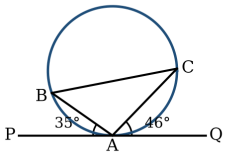
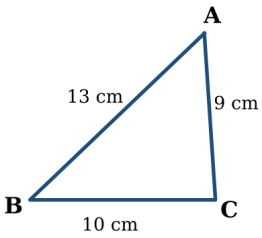
Day 94	IGCSE 10-a-day
1 The graph of $y = x^2 + 2x + 3$ has a turning point at P. Find the equation of the tangent to the curve at P.	
2 Nadia changes £900 into dollars at £1 = $1.2. Nadia spends $390 and then changes the rest back into pounds at £1 = $1.25. How many pounds does Nadia get back?	
3 $A = 2^3 \times 3 \times 5^2$ $B = 2^4 \times 3^2 \times 5$ Write down, as a product of prime factors, (a) the HCF of A and B (b) the LCM of A and B	
4 A population of fish starts at 400 and grows by 50% each year. After how many whole years will the population first be at least double its starting value? (Calculator)	
5 The temperature, T °C, of a cup of tea t minutes after it is removed from a heat source is modelled by $T = 25 + \frac{80}{t}$ $(t \geq 1)$ (a) Find $\frac{dT}{dt}$ when t = 2. (b) Find the value of t when the temperature is falling at 5 °C per minute.	

Day 94 **IGCSE 10-a-day**

6 PAQ is a tangent to the circle at A. B and C are points on the circle. Angle PAB = 35° and angle CAQ = 46°.
(a) Work out the size of angle ABC.
(b) Work out the size of angle ACB.
The diagram is not drawn accurately.



7 Work out the area of triangle ABC.
Give your answer correct to 3 significant figures. (Calculator)



8 A closed cylinder (a drum) has radius r cm, height h cm and total surface area 96π cm^2.
(a) Show that its volume, V cm^3, is $V = 48\pi r - \pi r^3$.
(b) Find the maximum value of V in terms of π, and show that h = 2r when V is a maximum.

9 Here are the first five terms of a sequence.
$-5, 0, 17, 52, 111$
The nth term is of the form $an^3 + bn + c$.
Find the values of a, b and c.

10 $f(x) = -3x - 5$ and $g(x) = x^2 - 3$
Solve $fg(x) = gf(x)$