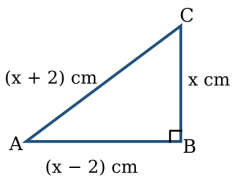
Day 268	IGCSE 10-a-day
1 100 beetles in a field are caught, marked and put back. Later, a second sample of 30 beetles is caught. 10 of these are marked. (a) Work out an estimate for the number of beetles in a field. (b) State one assumption you have made.	
2 Write these numbers in order of size, starting with the smallest. 67%, $\frac{4}{5}$, 95%, $\frac{14}{17}$	
3 Solve $2x^2 + 6x + 2 = 0$ (Calculator) Give your answers correct to 2 decimal places.	
4 Machine A makes 75% of the items and machine B makes the rest. 1% of items from A are faulty and 6% of items from B are faulty. An item is chosen at random. (a) Work out the probability that the item is faulty. (b) The item is faulty. Work out the probability that it came from machine A.	
5 $y = -x^3 + 6x^2 - 9x - 4$ (a) Find the coordinates of the stationary points. (b) Use $\frac{d^2y}{dx^2}$ to decide whether each is a maximum or a minimum.	

Day 268 **IGCSE 10-a-day**

6 ABC is a right-angled triangle with sides (x − 2) cm, (x) cm and (x + 2) cm. The longest side is (x + 2) cm.
(a) Find the value of x.
(b) Work out the area of the triangle.
The diagram is not drawn accurately.



7 The curves $y = -x^2 + 2x + 3$ and $y = -3x^2 - 2x + 1$ touch at one point.
Find the coordinates of this point and the equation of the common tangent.

8 A rectangle has area $(26 + 14\sqrt{3})$ cm^2 and length $(2 + 2\sqrt{3})$ cm.
Find the width of the rectangle.
Give your answer in the form $a + b\sqrt{3}$

9 The normal to the curve $y = x^2 - 2x$ at the point P where x = 2 meets the curve again at Q.
Find the coordinates of Q.

10 p = 11.5 and r = 7.9, each correct to 1 decimal place.
q = 2.21, correct to 2 decimal places.
Work out the upper bound of $\frac{p + q}{r}$. Give your answer correct to 3 significant figures.
(Calculator)