Day 356 **IGCSE 10-a-day**

1 A van is bought for £25,000.
Its value falls by 20% each year.
Work out its value after 2 years. (Calculator)

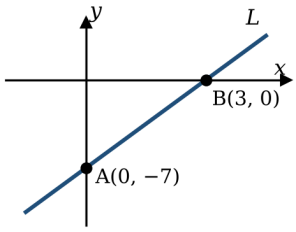
2 The table shows the number of students in each of four groups.
(a) A stratified sample of 37 is taken. Work out how many come from Year 7.
(b) A different stratified sample has 27 from Year 10. Work out the size of this sample.

	Year 7	Year 8	Year 9	Year 10
Number	80	240	240	180

3 $M = \begin{pmatrix} 2 & -3 \\ -1 & 2 \end{pmatrix}$.
(a) Work out the determinant of M.
(b) Find M^{-1}.

4 $f(x) = -2x^{5/2} + x - 6x^{1/2}$
Find $f'(x)$ and work out the value of $f'(9)$.

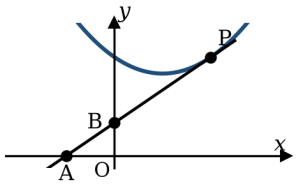
5 The diagram shows the straight line L, which passes through the points A and B.
The line M is perpendicular to L and passes through B.
Find the equation of M in the form y = mx + c.



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6 A right-angled triangle has base $(4 + \sqrt{11})$ cm and height $(4 - \sqrt{11})$ cm.
Show that the area of the triangle is a rational number.
Work out the area.

7 The diagram shows the curve $y = x^2 - 2x + 6$ and the tangent at P(2, 6), meeting the axes at A and B.
(a) Find an equation of the tangent at P.
(b) Work out the area of triangle OAB.



8 A rectangle has length 21 cm and width 13 cm. Both measurements are correct to the nearest centimetre.
Tom says that the perimeter of the rectangle could be exactly 65 cm.
Is Tom correct? You must show your working.

9 A curve has equation $y = x^2 + 5x + k$, where k is a constant.
The tangent to the curve at the point where $x = 2$ passes through $(-2, -19)$.
Find the value of k.

10 Triangle P has vertices A$(-4, -2)$, B$(-10, -8)$ and C$(-10, 2)$.
Triangle Q has vertices A'(2, 4), B'(5, 7) and C'(5, 2).
Q is an enlargement of P.
Describe fully the single transformation that maps P onto Q.