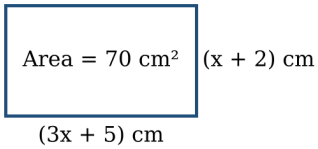
Day 348	IGCSE 10-a-day
1 Find $\frac{dy}{dx}$ when $y = -x^5 + 5x^3 - 6x - 4$	
2 $A = \begin{pmatrix} 2 & -1 \\ -2 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$. $AX = B$, where X is a 2×1 matrix. Find X.	
3 The 3rd term of a geometric sequence is 256. The 5th term of the sequence is 1024. All the terms of the sequence are positive. (a) Work out the common ratio. (b) Work out the first term.	
4 Write $\sqrt{96} - \sqrt{216} + \sqrt{150}$ in the form $a\sqrt{6}$ where a is an integer.	
5 $y = -2x^4 + 64x$ Find the coordinates of the stationary point and determine its nature.	

Day 348 **IGCSE 10-a-day**

6 y is directly proportional to the cube of x.
When x = 2, y = 32.
(a) Find a formula for y in terms of x.
(b) Work out the positive value of x when y = 108.

7 The diagram shows a rectangle of length (3x + 5) cm, width (x + 2) cm and area 70 cm^2.
(a) Show that $3x^2 + 11x - 60 = 0$.
(b) Work out the perimeter of the rectangle.



8 $y = 2x^4 - 36x^2 + 7$
Find the coordinates of the stationary points of the curve and determine the nature of each.

9 Tin A holds red paint and white paint in the ratio 3 : 5.
Tin B holds red paint and white paint in the ratio 5 : 5.
48 litres from tin A is mixed with some of tin B.
The ratio of red paint to white paint in the mixture is 11 : 15.
Work out how many litres were taken from tin B.

10 $\mathbf{OA} = \mathbf{a}$, $\mathbf{OB} = \mathbf{b}$, $\mathbf{OP} = \frac{3}{4}\mathbf{a}$ and $\mathbf{OQ} = \frac{1}{2}\mathbf{b}$.
AQ and BP meet at X.
(a) Find **OX** in terms of **a** and **b**.
(b) Find the ratio AX : XQ.

