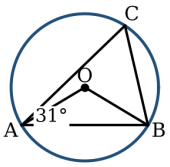
Day 205 **IGCSE 10-a-day**

1 Work out the exact value of $2 \tan 30° \times \cos 60°$.
Give your answer in its simplest form, with no decimals.

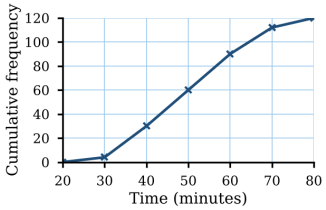
2 A, B and C are points on a circle, centre O.
Angle OAB = 31°.
(a) Work out the size of angle AOB.
(b) Work out the size of angle ACB.
The diagram is not drawn accurately.



3 Two curves have equations $y = 3x^2 - 2x + 5$ and $y = x^2 - 10x - 5$.
Find the value of x at which the curves have the same gradient.

4 Two shapes are mathematically similar.
The smaller has height 27 cm and area 28 cm^2.
The larger has area $\frac{112}{9}$ cm^2.
Work out the height of the larger shape.

5 The cumulative frequency graph gives information about the times of 120 students to complete a puzzle.
(a) Find an estimate for the median and the interquartile range.
(b) Estimate how many of the 120 had a time greater than 65.



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6 The curve $y = x^2 + 2x$ and the line $y = x + 2$ intersect at two points A and B, where A has the smaller x coordinate. (a) Find the coordinates of A and B. (b) Find the gradient of the curve at A and at B.	
7 $A = \begin{pmatrix} 0 & -1 \\ 1 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} -1 & -6 \\ 3 & 9 \end{pmatrix}$. MA = B, where M is a 2 × 2 matrix. Find M.	
8 The curve $y = 2x^3 + 18x^2 + 48x + k$, where k is a constant, has the x-axis as a tangent. Find the two possible values of k.	
9 Show that the equation $x^2 + 3kx - 2 = 0$ has two distinct real solutions for all values of k.	
10 A train travels a distance of 400 km, correct to the nearest 50. The journey takes 4.3 hours, correct to 1 decimal place. Work out the lower bound of the speed. Give your answer correct to 3 significant figures. (Calculator)	