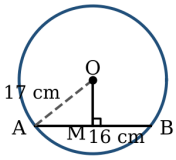
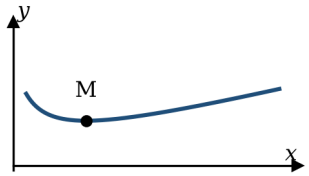
Day 20	IGCSE 10-a-day
1 $f(x) = 3x^2 + 4x + 4$ and $g(x) = 28x - 41$. Solve $f(x) = g(x)$.	
2 The nth term of a sequence is $2n^2 + 8n + 6$. (a) Work out the 11th term. (b) Is 797 a term of the sequence? You must show your working.	
3 A square has sides of length $(7 + 2\sqrt{2})$ cm. Work out the area of the square. Give your answer in the form $a + b\sqrt{2}$	
4 AB is a chord of a circle, centre O. M is the midpoint of AB. (Calculator) (a) Work out the length OM. (b) Work out angle AOB, to 1 decimal place. The diagram is not drawn accurately. 	
5 The diagram shows a sketch of the curve $y = x + \frac{4}{x}$ for $x > 0$. The curve has a minimum point at M. Find the coordinates of M, justifying that it is a minimum. 	

Day 20 **IGCSE 10-a-day**

6 $M = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$.

(a) Find the coordinates of the image of the point $(6, -1)$ under the transformation represented by M.

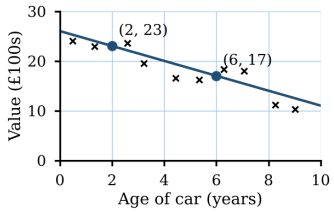
(b) Describe fully the single transformation represented by M.

7 The scatter graph shows age of car (x) and value (y).

The equation of the line of best fit is $y = -1.5x + 26$.

(a) Estimate y when $x = 5$.

(b) Explain why an estimate of y when $x = 25$ may be unreliable.



8 A tank is a cuboid with a square base of side x metres and height h metres, and has an open top. Its volume is 32 m^3.

(a) Show that the total outside surface area, A m^2, is $A = x^2 + \frac{128}{x}$.

(b) Find the minimum possible value of A, showing that it is a minimum.

9 A and B are points on the curve $y = 3x^2 + 4x$.

The x coordinate of A is 2 and the x coordinate of B is 5.

Work out the gradient of the line AB.

10 The tangent to the curve $y = x^3 - x^2 + 6x + 4$ at the point P where $x = -1$ meets the curve again at Q.

Find the coordinates of Q.