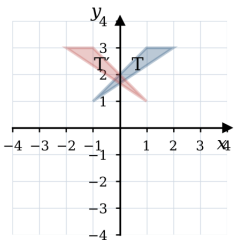
Day 24	IGCSE 10-a-day
1 A point A is on level ground in line with the base of a mast. (Calculator) The angle of elevation of the top of the mast from A is 31°. B is a point on the same line, 40 m further from the mast than A. The angle of elevation of the top of the mast from B is 17°. Work out the height of the mast. Give your answer to 1 decimal place.	
2 Describe fully the single transformation that maps the graph of y = f(x) onto the graph of (a) y = f(2x) (b) y = −f(x)	
3 Solve $x^2 - 10x + 5 = 0$ Give your answers in the form $a \pm b\sqrt{c}$	
4 Show that $(4 + 2\sqrt{2})(4 - 2\sqrt{2})$ is an integer.	
5 $y = -2x^3 + 3x^2 + 36x + 3$ (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 24	IGCSE 10-a-day

6 Triangle T is mapped onto triangle T′ by a single transformation.
(a) Describe fully this transformation.
(b) Write down the matrix that represents it.



7 A shop mixes two types of coffee.
Type A costs £14.00 per kg and type B costs £7.00 per kg.
They are mixed in the ratio A : B = 2 : 3.
The mixture is sold for £13.72 per kg.
Work out the percentage profit.

8 $f(x) = x^3 + kx^2 + 48x - 2$, where k is a constant.
Given that f is an increasing function for all values of x, find the range of possible values of k.

9 ABCD is a rectangle with AB = 10 cm and AD = 14 cm.
A point P inside the rectangle is such that AP ≤ 8 cm and P is nearer to AB than to AD.
Work out the area of the region in which P can lie. Give your answer in terms of π.

10 The tangent to the curve $y = -2x^2 - x - 3$ at the point where x = 0 meets the axes at A and B.
Work out the area of triangle OAB, where O is the origin.