Day 139	IGCSE 10-a-day
1 The positive numbers x and y satisfy $2x + y = 28$. Find the greatest possible value of xy, showing that it is the greatest.	
2 Simplify fully $\frac{6x^6y^3 \times 7x^2y^4}{6x^3y^2}$ Give your answer in the form kx^ay^b	
3 ξ = integers from 1 to 24 A = the numbers greater than 20 B = the prime numbers (a) List the elements of $A \cap B'$. (b) Find $n(A' \cap B')$.	
4 E is directly proportional to the cube of v. When v = 3, E = 108. (a) Find a formula for E in terms of v. (b) Work out the positive value of v when E = 32.	
5 The nth term of a sequence is $2n^2 - 4n + 8$. (a) Work out the 9th term. (b) One term of the sequence is 78. Work out the value of n for this term.	

Day 139 **IGCSE 10-a-day**

6 Rationalise the denominator of $\frac{3}{3\sqrt{2}}$

Give your answer in its simplest form.

7 The cost, C pence per kilometre, of running a van at a steady speed of v km/h is modelled by

$C = \frac{1}{10}v + \frac{810}{v}$ $(v > 0)$

Find the speed at which the cost per kilometre is least, and show that it is a minimum.

Work out the least cost per kilometre.

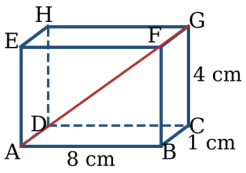
8 The diagram shows a cuboid ABCDEFGH.

(Calculator)

(a) Work out the length of the diagonal AG.

(b) Work out the angle between AG and the base ABCD, to 1 decimal place.

The diagram is not drawn accurately.

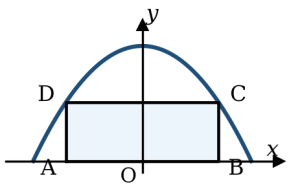


9 The diagram shows the curve $y = 48 - x^2$.

Rectangle ABCD has A, B on the x-axis and C, D on the curve. B is (x, 0).

(a) Show that the area of ABCD is $-2x^3 + 96x$.

(b) Find the maximum area of ABCD, showing that it is a maximum.



10 The point P(3, 6) is rotated 180° about the origin.

The image is then reflected in the line $y = -x$.

(a) Write down the coordinates of the final image of P.

(b) Describe fully the single transformation that is equivalent to these two transformations.