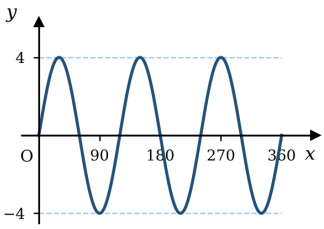
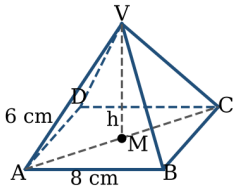
Day 260	IGCSE 10-a-day
1 $y = (x + 4)^2(x + 3)$ Show that $\frac{dy}{dx} = (x + 4)(3x + 10)$.	
2 Factorise fully $72x^2 - 18y^2$	
3 Work out the exact value of cos 60° + cos 45°. Give your answer in its simplest form, with no decimals.	
4 The diagram shows the graph of $y = a \sin bx$, where a and b are positive integers. (a) Write down the value of a and the value of b. (b) Work out the value of y when x = 290°. 	
5 The function $f(x) = 3x^2 - 18x + 2$ is increasing when $x > k$. Find the value of k.	

Day 260 **IGCSE 10-a-day**

6 VABCD is a pyramid on a square base. V is directly above the centre M.
(a) Work out the height VM of the pyramid.
(b) Work out the volume of the pyramid.
The diagram is not drawn accurately.



7 A company makes and sells x thousand items.
All amounts are in thousands of pounds.
The revenue is R = x(15 − x) and the cost is C = 7 + 9x.
(a) Show that the profit P = R − C is P = $-x^2$ + 6x − 7.
(b) Find the number of items that must be sold for the profit to be a maximum, and this maximum profit.

8 In a group of students, 30% are boys and the rest are girls.
35% of the boys and 45% of the girls walk to school.
What percentage of all the students walk to school?

9 The table gives information about 106 times.
Work out an estimate for the median.
Assume the values in each class are evenly spread.

Time, t (minutes)	Frequency
10 < t ≤ 30	26
30 < t ≤ 50	25
50 < t ≤ 70	10
70 < t ≤ 90	20
90 < t ≤ 110	25

10 y is directly proportional to the cube of x.
x is decreased by 50%.
Work out the percentage change in y.