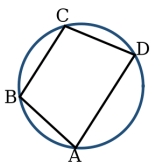
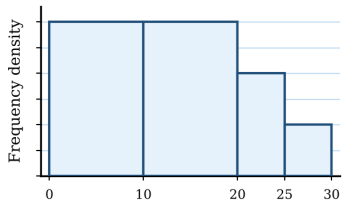
Day 211	IGCSE 10-a-day
1 Differentiate $6x^4 - 8x^3 - 8x^2 - 8x$ with respect to x.	
2 $\mathbf{OA} = \mathbf{b}$, $\mathbf{OB} = 3\mathbf{a} + 5\mathbf{b}$ and $\mathbf{OC} = 9\mathbf{a} + 13\mathbf{b}$. Show that A, B and C lie on a straight line.	
3 A ball is thrown upwards. Its height above the ground, h metres, after t seconds is given by $h = -4t^2 + 16t + 2$ (a) Work out the greatest height reached by the ball. (b) Work out the velocity of the ball when t = 3. State whether it is moving up or down.	
4 A, B, C and D are points on a circle. Angle DAB = (3x + 10)°, angle BCD = (5x + 42)° and angle ABC = (3x + 25)°. (a) Work out the value of x. (b) Work out the size of angle ADC. The diagram is not drawn accurately. 	
5 $y = -x^4 - 4x$ Find the coordinates of the stationary point and determine its nature.	

Day 211 **IGCSE 10-a-day**

6 Pipe A can fill an empty pool in 6 minutes.
Pipe B can fill an empty pool in 30 minutes.
Both are turned on at the same time.
How long do they take to fill an empty pool?

7 The line L has equation $12x + 5y = 120$.
L crosses the x-axis at the point A and the y-axis at the point B.
(a) Find the coordinates of A and B.
(b) Work out the area of triangle OAB, where O is the origin.

8 The histogram shows the ages, in years, of some visitors.
The bar for 25 to 30 represents 10 visitors.
(a) Work out the frequency of the class 10 to 20.
(b) Work out the total frequency.



9 Given that $(a + \sqrt{6})^2 = 15 + 6\sqrt{6}$,
where a is a positive integer, find the value of a.

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 2 : 1. N is on OB with ON : NB = 3 : 1. AN and BM intersect at X.
(a) Find BM in terms of **a** and **b**.
(b) Find OX in terms of **a** and **b**.
The diagram is not drawn accurately.

