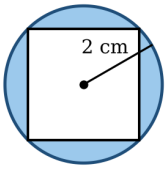
Day 79	IGCSE 10-a-day
1 A flight leaves London at 07:35 (London time). It takes 13 hours 30 minutes. When it is 12:00 in London it is 19:00 in Singapore. At what time, in Singapore time, does the flight land? Say if it is on a different day.	
2 30 fish in a lake are caught, tagged and put back. Later, a second sample of 30 fish is caught. 3 of these are tagged. (a) Work out an estimate for the number of fish in a lake. (b) State one assumption you have made.	
3 A = (−4, 4), B = (−1, 5), C = (0, 4) and D = (k, 7). **AB** is parallel to **CD**. Find the value of k.	
4 $y = -2x^3 + 18x^2 - 48x - 7$ Find the range of values of x for which y is decreasing.	
5 A machine was bought for £14,500. Each year its value decreases by the same percentage. After 3 years it is worth £7,424. Work out the percentage decrease each year.	

Day 79 **IGCSE 10-a-day**

6 A curve has equation $y = x^3 + 3x^2 - 4x - 8$.
Find the equations of the two tangents to the curve that are parallel to the line $y = -4x - 8$.

7 A circle has equation $(x + 2)^2 + (y - 4)^2 = 50$.
The point P(−3, −3) lies on the circle.
Find an equation of the tangent to the circle at P.
Give your answer in the form $ax + by = c$, where a, b and c are integers.

8 The diagram shows a square inside a circle of radius 2 cm.
The four vertices of the square lie on the circle.
Work out the area of the shaded region. Give your answer in terms of π.



9 P is the point $(p, 3p^2)$ on the curve $y = 3x^2$, where $p \neq 0$.
The normal to the curve at P meets the y-axis at the point Q.
Show that the y coordinate of Q is $3p^2 + \frac{1}{6}$.

10 VABCD is a pyramid. The base ABCD is a square with sides of 9 cm.
The vertex V is vertically above the centre O of the base. VA = 19 cm.
(a) Work out the vertical height VO.
(b) Work out the angle between VA and the base. (Calculator)

