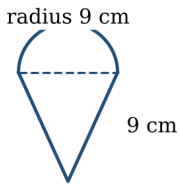
Day 244	IGCSE 10-a-day
1 Differentiate $6x^3 + 4x - 1$ with respect to x.	
2 $f(x) = 2x + 3$ and $g(x) = x^2 + 3x - 1$. (a) Find fg(x). (b) Find gf(x).	
3 A ball is thrown upwards. Its height above the ground, h metres, after t seconds is given by $h = -5t^2 + 30t + 10$ (a) Work out the greatest height reached by the ball. (b) Work out the velocity of the ball when t = 4. State whether it is moving up or down.	
4 $f(x) = -2x + 4$ and $g(x) = x^2 - 4$ (a) Find gf(x). Give your answer in the form $ax^2 + bx + c$. (b) Solve $gf(x) = -4$	
5 A bag contains counters. $\frac{1}{3}$ of the counters are red and $\frac{2}{5}$ of the counters are blue. The rest of the counters, 24 of them, are green. How many red counters are there?	

Day 244 **IGCSE 10-a-day**

6 In a coach, the ratio of the number of adults to the number of children is 5 : 3.
Then 15 more adults are added and 19 children are removed.
The ratio is now 11 : 1.
How many children were there at the start?

7 A solid is made from a cone of height 9 cm and a hemisphere. Both have radius 9 cm.
Work out the total volume of the solid. Give your answer in terms of π.



8 A and B are two events.
P(A) = 0.5, P(B) = 0.3 and P(A or B) = 0.65
(a) Work out P(A and B).
(b) Are A and B independent? You must show your working.

9 The curve C has equation $y = x^2 - x - 2$.
The points A and B on C have x coordinates −1 and 1.
The tangents to C at A and at B meet at the point T. Find the coordinates of T.

10 The table shows the times taken by 171 people.
(a) Work out the frequency density for the class $65 < x \leq 80$.
(b) Estimate how many were greater than 24 minutes.

Time taken (minutes)	Frequency
$20 < x \leq 40$	35
$40 < x \leq 45$	45
$45 < x \leq 60$	28
$60 < x \leq 65$	6
$65 < x \leq 80$	57