Day 114	IGCSE 10-a-day
1 s is inversely proportional to the cube of t. When t = 10, s = 0.45. (a) Find a formula for s in terms of t. (b) Find s when t = 4.	
2 $y = -3x^4 - x^3 + 3x^2 - 3$ The curve crosses the y-axis at the point A. Work out the coordinates of A and the gradient of the curve at A.	
3 A biased spinner lands on one of four outcomes with these probabilities. red: 2x; blue: 3x; green: 2x + 0.05; yellow: 0.6 (a) Work out the value of x. (b) The biased spinner is used 60 times. Work out an estimate for the number of times it lands on red.	
4 Simplify $(16x^2y^6)^{\frac{1}{2}}$	
5 $n(\xi) = 100$, $n(A) = 36$, $n(B) = 35$ and $n(A \cap B) = 8$. An element of ξ is chosen at random. (a) Find the probability that it is in $A \cup B$. (b) Given that it is in B, find the probability that it is also in A.	

Day 114 **IGCSE 10-a-day**

6 A tank is a cuboid with a square base of side x metres and height h metres, and has an open top. Its volume is 500 m^3.
(a) Show that the total outside surface area, A m^2, is $A = x^2 + \frac{2000}{x}$.
(b) Find the minimum possible value of A, showing that it is a minimum.

7 Lena invests £5,500 in an account paying compound interest.
The interest rate is the same percentage each year.
After 3 years the account holds £7,320.50.
Work out the annual percentage interest rate.

8 The graph of $y = f(x)$ has a minimum point at $(0, -5)$.
Write down the coordinates of the turning point of the graph of
(a) $y = \frac{1}{2}f(x)$
(b) $y = 2f(2x)$

9 A piece of thin metal rod 136 cm long is cut into two pieces. One piece is bent to form a square of side x cm. The other piece is bent to form a rectangle whose length is twice its width.
(a) Show that the total area, A cm^2, enclosed by the two shapes is $A = x^2 + \frac{(136 - 4x)^2}{18}$.
(b) Find the value of x for which A is least, and work out this least area.

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 1 : 2. N is on OB with ON : NB = 1 : 4. 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.

