Day 16	IGCSE 10-a-day
1 A flight leaves London at 09:45 (London time). It takes 5 hours 25 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 Triangle ABC has AB = 16 cm and BC = 15 cm. The area of triangle ABC is 60 cm^2. Angle ABC is obtuse. Work out the size of angle ABC. Do not use a calculator.	
3 $y = -4x^{5/2} - x - \frac{6}{x^{3/2}}$ Find $\frac{dy}{dx}$. Give each term of your answer in the form ax^n.	
4 $P = ab^t$, where a and b are positive constants. When t = 1, P = 5400. When t = 3, P = 12150. Find the values of a and b, and the value of P when t = 5.	
5 V is inversely proportional to the square of r. When r = 3, V = 1. (a) Find a formula for V in terms of r. (b) Find the value of V when r = 1.	

Day 16	IGCSE 10-a-day
6 $f(x) = x^3 - 27x + 7$ Find the y coordinate of the local maximum point and the y coordinate of the local minimum point.	
7 The curve $y = -x^2 + 14x - 24$ crosses the x-axis at the points A and B. (a) Find the coordinates of A and B. (b) Find the coordinates of the maximum point of the curve.	
8 $A = \begin{pmatrix} 2 & -1 \\ 3 & -2 \end{pmatrix}$ and $B = \begin{pmatrix} -3 & -4 \\ -3 & -6 \end{pmatrix}$. $AM = B$, where M is a 2×2 matrix. Find M.	
9 Machine A makes 50% of the bolts in a factory. Machine B makes the rest. 60% of the bolts from machine A are faulty. 10% of the bolts from machine B are faulty. (a) Work out the probability that a bolt chosen at random is faulty. (b) A faulty bolt is found. Work out the probability that it was made by machine A.	
10 The diagram shows the curve $y = -x^2 + x + 5$ and the tangent at P(1, 5), meeting the axes at A and B. (a) Find an equation of the tangent at P. (b) Work out the area of triangle OAB. 	