Day 197	IGCSE 10-a-day
1 (a) Write 140 and 245 as products of prime factors. (b) Find the HCF and the LCM of 140 and 245. Give your answers as numbers.	
2 Work out the exact value of $6 \tan 45° \div \sin 30°$. Give your answer in its simplest form, with no decimals.	
3 In triangle PQR, side QR is extended to S. Angle QPR = $(5x)°$ Angle PQR = $(3x - 15)°$ Angle PRS = $(6x + 19)°$ (a) Work out the value of x. (b) Work out the size of angle PRQ.	
4 A curve has equation $y = 2x^3 + 3x^2 - 72x - 3$. Find the coordinates of the stationary points of the curve.	
5 $M = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$. (a) Find the coordinates of the image of the point $(-2, -4)$ under the transformation represented by M. (b) Describe fully the single transformation represented by M.	

Day 197	IGCSE 10-a-day
6 Simplify fully $\frac{x^2 - 3x - 10}{x^2 - 7x} \times \frac{x^2 + 4x}{x - 5}$	
7 An open box has a square base of side x cm and height h cm. The total outside surface area is 432 cm^2. (a) Show that the volume of the box is $V = \frac{1}{4}(432x - x^3)$ cm^3. (b) Find the maximum volume of the box, proving that it is a maximum.	
8 A circle has equation $x^2 + y^2 = 289$. The point P(8, −15) lies on the circle. (a) Find the 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. (b) The tangent meets the x-axis at the point T. Write down the coordinates of T.	
9 The curves $y = x^2 + 3x + 4$ and $y = -2x^2 + 15x - 8$ touch at one point. Find the coordinates of this point and the equation of the common tangent.	
10 A laptop loses 20% of its value each year. After 3 years it is worth £4,608. Work out its value when it was new. (Calculator)	