Day 264	IGCSE 10-a-day
1 The capacity of a tank is 670 litres, correct to the nearest 10. Write down the error interval for the capacity of a tank, using c.	
2 $M = \begin{pmatrix} 0 & 3 \\ 2 & 7 \end{pmatrix}$. (a) Work out the determinant of M. (b) Find M^{-1}.	
3 The ratio of Year 10 students to Year 11 students in a school is 1 : 2. 80% of the Year 10 students and 20% of the Year 11 students have a part-time job. What percentage of all of these students have a part-time job?	
4 $y = -2x^3 + 6x + 1$ (a) Show that there is a stationary point at x = 1. (b) By finding the gradient when $x = \frac{1}{2}$ and when $x = \frac{3}{2}$, decide whether it is a maximum or a minimum.	
5 Ivan invests £3,000 for 3 years at 3.5% per year simple interest. Chen invests £3,000 for 3 years at 3.5% per year compound interest. Work out how much more interest Chen earns than Ivan. Give your answer to the nearest penny. (Calculator)	

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6 The line $y = -5x - 2$ meets the curve $y = x^2 + x + 7$. Show that the line is a tangent to the curve and find the coordinates of the point where they touch.	
7 Points A and B are on level ground, 86 m apart, with B between A and the foot of a cliff. The angle of elevation of the top of the cliff is 29° from A and 44° from B. Work out the height of the cliff. Give your answer to 3 significant figures. (Calculator)	
8 OA = $\mathbf{a}$ and OB = $\mathbf{b}$. OP = $4\mathbf{a} + 5\mathbf{b}$, OQ = $\mathbf{a} - \mathbf{b}$ and OR = $-3\mathbf{a} - 9\mathbf{b}$. (a) Show that P, Q and R lie on a straight line. (b) Work out the ratio PQ : QR in its simplest form.	
9 $f(x) = -3x + 1$ and $g(x) = x^2$ Solve $fg(x) = gf(x)$	
10 The normal to the curve $y = x^2 + x + 2$ at the point P where $x = 0$ meets the curve again at Q. Find the coordinates of Q.	