| Day 8 | IGCSE 10-a-day |
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| **1** Work out the value of $3x - y^3$ when $x = -5$, $y = -3$ and $z = 4$. | |
| **2** Solve $7 \tan x + 3 = 0$ for $0° \leq x \leq 360°$. (Calculator) Give your answers correct to 1 decimal place. | |
| **3** $B = \begin{pmatrix} -4 \\ 4 \end{pmatrix}$ and $C = \begin{pmatrix} -2 & 5 \end{pmatrix}$. (a) Work out CB. (b) Write down the order of the matrix BC. | |
| **4** A particle moves in a straight line. After t seconds, its displacement from a fixed point O is s metres, where $s = -2t^3 + 24t^2 + 5t$ for $t \geq 0$ Find the greatest speed of the particle, and the value of t at which it occurs. | |
| **5** Solve $3x^2 + 9x + 5 = 0$ Give your answers in surd form. | |

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| **6** The normal to the curve $y = 2x^2 - 3x - 5$ at the point where $x = 1$ meets the x-axis at N.<br>Find the coordinates of N. | |
| **7** V is inversely proportional to r.<br>When r = 3, V = 3.<br>Find the value of V when r = 1. | |
| **8** Write $\frac{3+\sqrt{6}}{3-\sqrt{6}}$ in the form $p + q\sqrt{6}$<br>where p and q are rational numbers. | |
| **9** The tangent to the curve $y = -x^2 + x - 4$ at the point where $x = 0$ meets the axes at A and B.<br>Work out the area of triangle OAB, where O is the origin. | |
| **10** A rectangle has area 60 $cm^2$, correct to 2 significant figures.<br>Its length is 8.400000000000000355271367880050092935562133789062 5 cm, correct to 2 significant figures.<br>Work out the upper bound of the width of the rectangle. Give your answer correct to 3 significant figures. (Calculator) | |