


<b>2nd January</b>		 Corbettmaths
<p>Chris makes 5-digit numbers using all of the cards below.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 2px;">1</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">2</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">3</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">5</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">8</div> </div> <p>How many different numbers less than 50000 can he make?</p>	$1, 2, 3$ $3 \times 4 \times 3 \times 2 \times 1$ $= 72$	
<p><math>A = \begin{pmatrix} -1 &amp; 3 \\ 2 &amp; 1 \end{pmatrix}</math>     <math>B = \begin{pmatrix} 2 &amp; -1 \\ -1 &amp; 7 \end{pmatrix}</math></p> <p>Work out the matrix <b>BA</b></p> <div style="margin-left: 150px;"> <math>\begin{pmatrix} -4 &amp; 5 \\ 15 &amp; 4 \end{pmatrix}</math> </div>	$\begin{pmatrix} 2 & -1 \\ -1 & 7 \end{pmatrix} \begin{pmatrix} -1 & 3 \\ 2 & 1 \end{pmatrix}$ $\left( \begin{array}{cc} (2 \times -1) + (-1 \times 2) & (2 \times 3) + (-1 \times 1) \\ (-1 \times -1) + (7 \times 2) & (-1 \times 3) + (7 \times 1) \end{array} \right)$	
<p><math>(x - 5)</math> is a factor of <math>x^3 - 6x^2 + 3x + a</math></p> <p>Work out the value of <math>a</math>.</p>	$f(5) = 0$ $f(5) = 125 - 150 + 15 + a$ $= a - 10$ $a - 10 = 0$ $a = 10$	
<p>A curve has equation <math>y = x^2 + 6x - 3</math></p> <p>Work out the equation of the tangent to the curve <math>y = x^2 + 6x - 3</math> at the point <math>(1, 4)</math></p> <p style="margin-left: 100px;"><math>x \quad y</math></p> $\frac{dy}{dx} = 2x + 6$ <p style="margin-left: 100px;">when <math>x = 1</math>     <math>\frac{dy}{dx} = 8</math></p> $y = 8x + c$	$4 = 8 + c$ $c = -4$ $y = 8x - 4$	