Name: _____ 5-a-day Further Maths

**22nd August**

Corbettmaths

Show that

$2sin^2\theta \equiv 2 - 2cos^2\theta$

$\cos^2\theta + \sin^2\theta = 1$

$\sin^2\theta = 1 - \cos^2\theta$

$2\sin^2\theta = 2 - 2\cos^2\theta$

Using the digits 3, 4, 5, 6, 7 and 9, how many numbers greater than 70000, without any repeated digits, can be made?

$\underset{7,9}{2} \times 5 \times 4 \times 3 \times 2 = 240$

$6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720 +$

$960$

Given that $y = 5x - x^2$

Work out the coordinates of the point at which the gradient of the curve is $-1$

$\frac{dy}{dx} = 5 - 2x$

$5 - 2x = -1$

$x = 3$

$(3, 6)$

$\mathbf{A} = \begin{pmatrix} 3 & -2 \\ 5 & 1 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} -7 & 1 \\ 0 & 4 \end{pmatrix}$

Work out **AB**

$AB = \begin{pmatrix} 3 & -2 \\ 5 & 1 \end{pmatrix}\begin{pmatrix} -7 & 1 \\ 0 & 4 \end{pmatrix}$

$= \begin{pmatrix} -21 & -5 \\ -35 & 9 \end{pmatrix}$

Work out **BA**

$BA = \begin{pmatrix} -7 & 1 \\ 0 & 4 \end{pmatrix}\begin{pmatrix} 3 & -2 \\ 5 & 1 \end{pmatrix}$

$= \begin{pmatrix} -16 & 15 \\ 20 & 4 \end{pmatrix}$