Name: _____ 5-a-day Further Maths

1st December

Corbettmaths

$\mathbf{M} = \begin{pmatrix} -2 & 3 \\ -4 & -1 \end{pmatrix}$

Work out the matrix $\mathbf{M}^2$

$\begin{pmatrix} -2 & 3 \\ -4 & -1 \end{pmatrix}\begin{pmatrix} -2 & 3 \\ -4 & -1 \end{pmatrix} = \begin{pmatrix} -8 & -9 \\ 12 & -11 \end{pmatrix}$

A group of 15 people enter a room. Each person shakes hands, once, with all the other people in the room.

How many handshakes are there in total?

$\frac{15 \times 14}{2} = 105$

Solve the simultaneous equations

$x + y + 2z = 18 \quad (1)$

$-x + 2y + 8z = 52 \quad (2)$

$2x + 3y + z = 72 \quad (3)$

(3) × 2 − (1): $3x + 5y = 126 \quad (4)$

(3) × 8 − (2): $17x + 22y = 524 \quad (5)$

(4) × 22 $66x + 110y = 2772$

(5) × 5 $85x + 110y = 2620$

$19x = -152$

$x = -8$

$y = 30$

$22 + 2z = 18 \Rightarrow z = -2$

Solve $\cos\theta = -0.7$ for $0° \leq \theta \leq 360°$

$\theta = 134.4°, 225.6°$