Name: _____ 5-a-day Further Maths

30th September

Corbettmaths

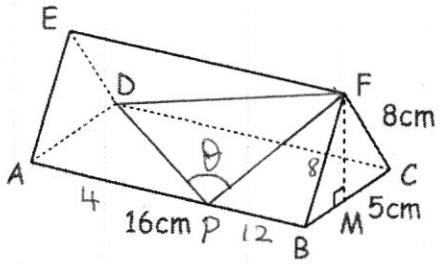
The nth term of a sequence is $\frac{240-8n}{70+4n}$

Work out the term in the sequence that is equal to 0

$240-8n=0$
$\rightarrow n=30$

Shown below is a triangular prism.

M is the midpoint of BC
P is the point on AB such that
AP : PB = 1 : 3



Work out the size of angle DPF

$DF=\sqrt{16^2+8^2}=\sqrt{320}$
$DP=\sqrt{5^2+4^2}=\sqrt{41}$
$PF=\sqrt{12^2+8^2}=\sqrt{208}$

$DF^2=DP^2+PF^2-2.DP.PF\cos\theta$
$320=41+208-2\sqrt{41}\sqrt{208}\cos\theta$
$\cos\theta=\frac{-71}{2\sqrt{41}\sqrt{208}}$
$\theta=112.6^\circ$

Find the transformation matrix that is equivalent to

- a rotation, 90° clockwise about the origin

followed by

- a reflection in the line $y=-x$

$(1,0)\rightarrow(0,-1)$
$(0,1)\rightarrow(1,0)$

$(1,0)\rightarrow(0,-1)$
$(0,1)\rightarrow(-1,0)$

$\begin{pmatrix}0&-1\\-1&0\end{pmatrix}\begin{pmatrix}0&1\\-1&0\end{pmatrix}=\begin{pmatrix}1&0\\0&-1\end{pmatrix}$