Name: _____ 5-a-day Further Maths

5th July

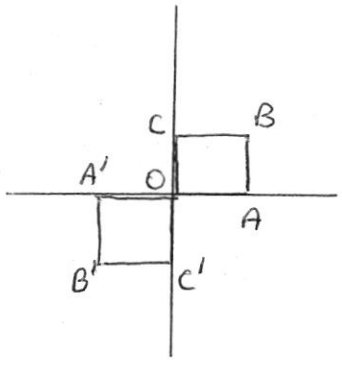
Corbettmaths

OABC is transformed by the matrix
$\begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$
to give OA'B'C'

Draw and label OA'B'C'

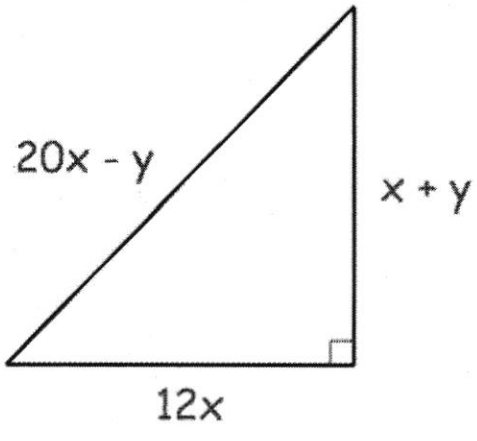
$\begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}\begin{pmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{pmatrix} = \begin{pmatrix} 0 & -1 & -1 & 0 \\ 0 & 0 & -1 & -1 \end{pmatrix}$

O A' B' C'



Describe the transformation fully.

Rotation 180° about (0, 0).



Prove $x : y = 14 : 85$

$(12x)^2 + (x+y)^2 = (20x-y)^2$

$144x^2 + x^2 + 2xy + y^2$

$= 400x^2 - 40xy + y^2$

$42xy = 255x^2$

$\frac{14}{85} = \frac{x}{y}$

$x : y = 14 : 85$

Use Pascal's triangle to expand
$(2 - 3y)^4$

1 4 6 4 1

16 8 4 2 1

1 $-3y$ $9y^2$ $-27y^3$ $81y^4$

$16 - 96y + 216y^2 - 216y^3 + 81y^4$