

Combined Transformations *ramp up*

a Translate (2, 1) by $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$, then by $\begin{pmatrix} -1 \\ 2 \end{pmatrix}$. Give the new point. _____	b Translate by $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$, then by $\begin{pmatrix} -1 \\ 2 \end{pmatrix}$. Write this as one vector. _____	c Reflect (3, 1) in the x axis, then in the y axis. Give the new point. _____	d Reflect in the x axis, then in the y axis. Describe this as one transformation. _____
e Reflect (2, 5) in $x = 1$, then in $x = 4$. Give the new point. _____	f Reflect in $x = 1$, then in $x = 4$. Describe this as one transformation. _____	g Reflect in $x = 4$, then in $x = 1$. Describe this as one transformation. _____	h Rotate (3, 1) 90° clockwise about (0, 0), then reflect in $y = 0$. _____
i Rotate 90° clockwise about (0, 0), then reflect in $y = 0$. Describe this as one. _____	j Find the invariant point of a 90° rotation about (2, 3). _____	k The mirror line is $y = 3$. Find the invariant point with $x = 5$. _____	l Reflect in the x axis, then in the y axis. Find every invariant point. _____

The Maths Habit

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