**Using Vectors in Translations**

Write down the vectors which represent the following translations.

(a) 4 right then 6 up

(b) 5 right then 2 up

(c) 2 up then 5 right

(d) 1 left then 7 up

(e) 5 left then 8 down

(f) 2 left then 1 down

(g) 5 right then 5 down

(h) 6 right

(i) 9 up

(j) 3 left

Write in words the translations described by each of these vectors.

(a) $\left(\begin{matrix}3\\5\end{matrix}\right)$ (b) $\left(\begin{matrix}6\\2\end{matrix}\right)$

(c) $\left(\begin{matrix}4\\0\end{matrix}\right)$ (d) $\left(\begin{matrix}0\\7\end{matrix}\right)$

(e) $\left(\begin{matrix}-2\\4\end{matrix}\right)$ (f) $\left(\begin{matrix}-5\\-1\end{matrix}\right)$

(g) $\left(\begin{matrix}8\\-2\end{matrix}\right)$ (h) $\left(\begin{matrix}-3\\3\end{matrix}\right)$

(i) $\left(\begin{matrix}-5\\-5\end{matrix}\right)$ (j) $\left(\begin{matrix}-10\\0\end{matrix}\right)$

(a) The point (5, 4) is translated with the vector $\left(\begin{matrix}2\\1\end{matrix}\right)$. Write down the new coordinates of the point.

(b) The point (2, 10) is translated with the vector $\left(\begin{matrix}-1\\-5\end{matrix}\right)$. Write down the new coordinates of the point.

(c) The point (-3, 6) is translated with the vector $\left(\begin{matrix}2\\-3\end{matrix}\right)$. Write down the new coordinates of the point.

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