

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

- (a) $\begin{pmatrix} 4 \\ 6 \end{pmatrix}$
- (b) $\begin{pmatrix} 5 \\ 2 \end{pmatrix}$
- (c) $\begin{pmatrix} 5 \\ 2 \end{pmatrix}$
- (d) $\begin{pmatrix} -1 \\ 7 \end{pmatrix}$
- (e) $\begin{pmatrix} -5 \\ -8 \end{pmatrix}$
- (f) $\begin{pmatrix} -2 \\ -1 \end{pmatrix}$
- (g) $\begin{pmatrix} 5 \\ -5 \end{pmatrix}$
- (h) $\begin{pmatrix} 6 \\ 0 \end{pmatrix}$
- (i) $\begin{pmatrix} 0 \\ 9 \end{pmatrix}$
- (j) $\begin{pmatrix} -3 \\ 0 \end{pmatrix}$

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

- (a) $\begin{pmatrix} 3 \\ 5 \end{pmatrix}$
- (b) $\begin{pmatrix} 6 \\ 2 \end{pmatrix}$
- (c) $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$
- (d) $\begin{pmatrix} 0 \\ 7 \end{pmatrix}$
- (e) $\begin{pmatrix} -2 \\ 4 \end{pmatrix}$
- (f) $\begin{pmatrix} -5 \\ -1 \end{pmatrix}$
- (g) $\begin{pmatrix} 8 \\ -2 \end{pmatrix}$
- (h) $\begin{pmatrix} -3 \\ 3 \end{pmatrix}$
- (i) $\begin{pmatrix} -5 \\ -5 \end{pmatrix}$
- (j) $\begin{pmatrix} -10 \\ 0 \end{pmatrix}$

- (a) 3 right, 5 up
- (b) 6 right, 2 up
- (c) 4 right
- (d) 7 up
- (e) 2 left, 4 up
- (f) 5 left, 1 down
- (g) 8 right, 2 down
- (h) 3 left, 3 up
- (i) 5 left, 5 down
- (j) 10 left

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

coordinates of the point.

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

coordinates of the point.

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

coordinates of the point.

- (a) (7, 5)
- (b) (1, 5)
- (c) (-1, 3)