Using Matrices to Transform Geometric Figures

4. Get Organized Complete the summary by filling in a matrix expression. Q is a triangle represented by its 2×3 coordinate matrix. (p. 264).

TRANSFORMATION	MATRIX OPERATION
Translate Q vertically	
Translate Q horizontally	
Enlarge or reduce Q	
Reflect Q across the x-axis or y-axis	
Rotate Q 90° clockwise or counterclockwise	

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4. Get Organized Complete the summary by filling in a matrix expression. Q is a triangle represented by its 2×3 coordinate matrix. (p. 264).

TRANSFORMATION	MATRIX OPERATION
Translate Q vertically	$Q + \begin{bmatrix} 0 & 0 & 0 \\ -2 & -2 & -2 \end{bmatrix}$
Translate Q horizontally	$Q + \begin{bmatrix} 3 & 3 & 3 \\ 3 & 0 & 0 \end{bmatrix}$
Enlarge or reduce Q	$4Q$, or $0.5Q$
Reflect Q across the x-axis or y-axis	$\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}Q$, or $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}Q$
Rotate Q 90° clockwise or counterclockwise	$\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}Q$, or $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}Q$