$\qquad$
Vocabulary: Translations, Dilations, Reflections, Rotations, and Isometry.

| 1) Translate the following points by | 2) Translation: $(x, y) \rightarrow(x-2, y-6)$ | 3) Reflection over $y=x$ |
| :---: | :---: | :---: |
| the rule: $(x, y) \rightarrow(x+1, y-4)$ | $\mathrm{W}(3,2) \quad \mathrm{C}(2,4) \quad \mathrm{T}(3,5) \quad \mathrm{Z}(5,2)$ |  |
|  | $\square)^{+\prime \prime}$ | $\square-$ |
| $S(-5,2) \rightarrow$ | - $-1-1$ | $\square-\quad-$ |
| $Y(-4,5) \rightarrow$ |  | $\square \mathcal{I}^{u}$ |
| $\mathrm{R}(-1,1) \rightarrow$ | $\rightarrow$ | C |
| A (-4, -2) $\rightarrow$ |  | $\square$ - |
|  | $\square$ |  |
| 4) Reflection over $\mathrm{y}=-3$ | 5) Rotate the figure $90^{\circ} \mathrm{CW}$ | 6) Rotate the figure $90^{\circ} \mathrm{CCW}$ |
|  |  |  |
|  |  | $\longrightarrow \longrightarrow \longrightarrow$ |
| - - | , | D |
|  |  | , |
| $\xrightarrow{x}$ |  | $\square$ |
| $\square$ |  |  |
| - |  |  |
| $\downarrow$ | $\square \quad-\quad \square$ |  |
|  |  |  |
|  | 8) Find the coordinates of the new | 9) Draw a dilation with $\mathrm{k}=2$ |
| vertices of the image that has been dilated by a factor of 5 . | vertices of the image that has been |       <br>    $1^{y}$   |
|  | - |  |
| $\mathrm{S}(-5,2) \rightarrow$ | $\mathrm{W}(3,2) \rightarrow$ | ${ }^{-2}$ |
| $Y(-4,5) \rightarrow$ | $\mathrm{C}(2,4) \rightarrow$ | $\xrightarrow{\longrightarrow}$ |
| $Y(-4,5) \rightarrow$ | $C(2,4) \rightarrow$ | $C \sim \sim B{ }^{-1}$ |
| $\mathrm{R}(-1,1) \rightarrow$ | T (3, 5) $\rightarrow$ |  |
|  |  |  |
| A (-4, -2) $\rightarrow$ | $\mathrm{Z}(5,2) \rightarrow$ | $\square$ |
|  |  | $\begin{array}{\|l\|l\|l\|l\|l} \hline & & & 1 & \\ \hline \end{array}$ |
| 10) Determine the scale factor, $\mathrm{k}=\ldots$ | 11) Given the points $M(-3,1) \quad S(5,-2)$ | 12) Given the points $\mathbf{K ( 0 , - 4 )} \quad \mathbf{P ( - 6 , - 3 )} \quad \mathbf{R ( 1 , 2 )}$ |
| $\mathrm{P}_{0}{ }^{6} \mathrm{t}^{y}$ | Translate: $(x-3, y+2)$ Reflect: $\mathrm{y}=\mathrm{x}$ | Reflect: over the x-axis Rotate: 270 CCW |
|  | lect. $y=x$ | $\mathrm{K}^{\prime} \rightarrow$ Rotate 270 |
|  | M ${ }^{\prime}$ |  |
|  | M ${ }^{\prime} \rightarrow$ | $\mathrm{P}^{\prime} \rightarrow \quad \mathrm{P}$ ' $\rightarrow$ |
|  | $S^{\prime} \rightarrow$ |  |
|  | $S^{\prime \prime} \rightarrow$ | $\mathrm{R}^{\prime} \rightarrow \quad \mathrm{R}$ ' $\rightarrow$ |

How many lines of symmetry do the following figures have?

