

Translations Notes

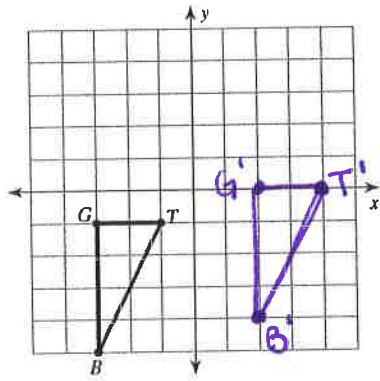
A translation is a transformation that slides a figure in a given direction.

In the coordinate plane, a translation moves every image from (x, y) to $(x+a, y+b)$ for fixed values of a and b .

It shifts a units horizontally and b units vertically.

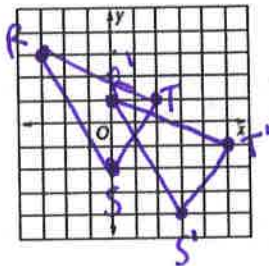
Examples:

- 1) translation: 5 units right and 1 unit up



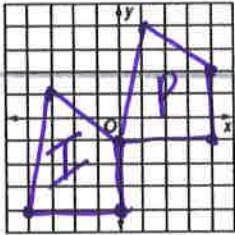
- 2)

$\triangle RST$ has vertices $R(-3, 3)$, $S(0, -2)$, and $T(2, 1)$. Graph $\triangle RST$ and its image $\triangle R'S'T'$ under the translation $(x, y) \rightarrow (x + 3, y - 2)$. List the coordinates of the vertices of the image.

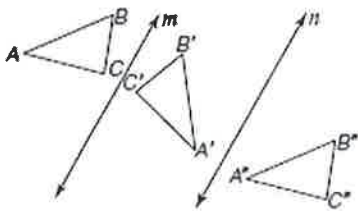


3)

quadrilateral $LMNP$ with vertices $L(4, 2)$, $M(4, -1)$, $N(0, -1)$, and $P(1, 4)$ under the translation $(x, y) \rightarrow (x - 4, y - 3)$



Another way to find the image of a translation is to reflect the figure twice in parallel lines. This type of transformation is called a composite reflection.

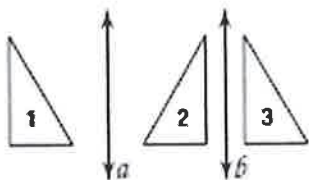


(In the figure, $m \parallel n$)

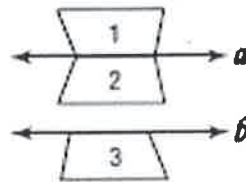
$\triangle A'B'C'$ is the image of $\triangle ABC$ reflected in line m .
 $\triangle A''B''C''$ is the image of $\triangle A'B'C'$ reflected in line n .
 The final image, $\triangle A''B''C''$, is a translation of $\triangle ABC$.

Examples:

Determine whether figure 3 is a translation image of figure 1. Explain.



yes, it is reflected twice over parallel lines



no, it is reflected over line a but translated over b.