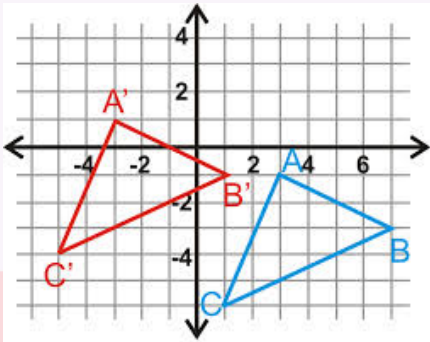


# Translations

A translation is a transformation that moves points the **same distance** and in the **same direction**.

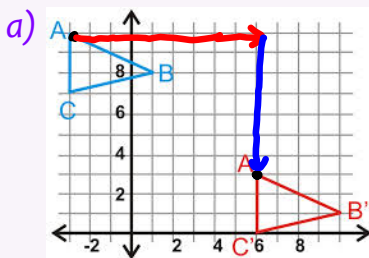


$\triangle ABC$  has been translated 6 units to the left and 2 units up.

Rule:  $(x, y) \longrightarrow (x - 6, y + 2)$

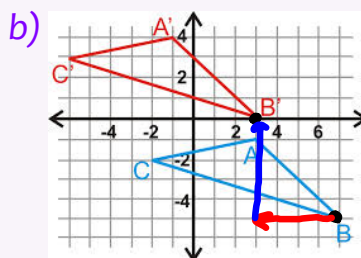
## Example 1

Write a rule for each picture below that will translate  $\triangle ABC$  to  $\triangle A'B'C'$ .



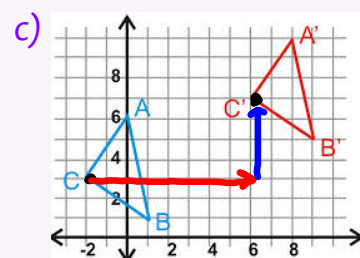
9 units right  
7 units down

$$(x, y) \longrightarrow (x + 9, y - 7)$$



4 units left  
5 units up

$$(x, y) \longrightarrow (x - 4, y + 5)$$



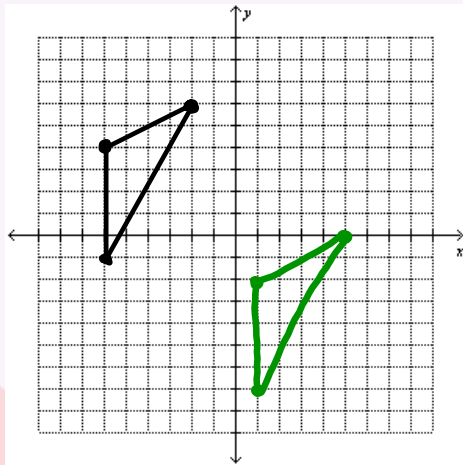
8 units right  
4 units up

$$(x, y) \longrightarrow (x + 8, y + 4)$$

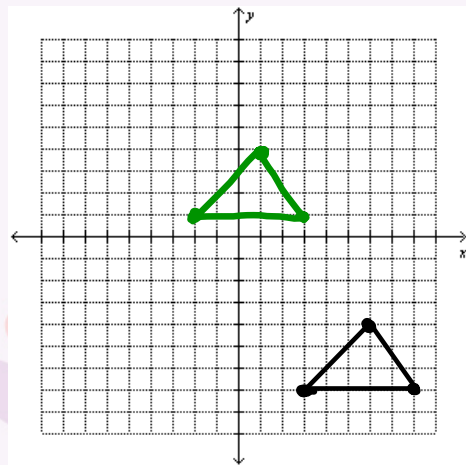
**Example 2**

Graph the image of the figure using the translation rule given.

a)  $(x, y) \rightarrow (x + 7, y - 6)$  *right down*



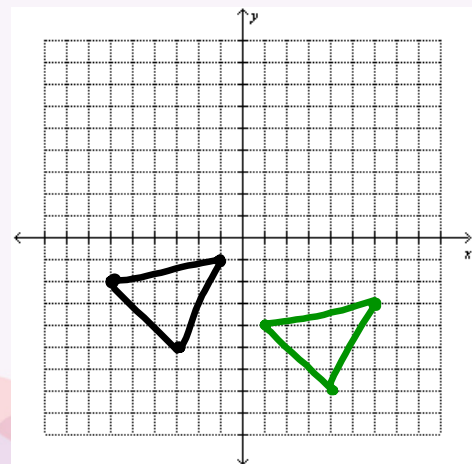
b)  $(x, y) \rightarrow (x - 5, y + 8)$  *left up*

**Example 3**

Use the information below to sketch the image of  $\triangle XYZ$  after a translation.

$X(-6, -2), Y(-3, -5), Z(-1, -1)$

**Translation:**  $(x, y) \rightarrow (x + 7, y - 2)$  *right down*



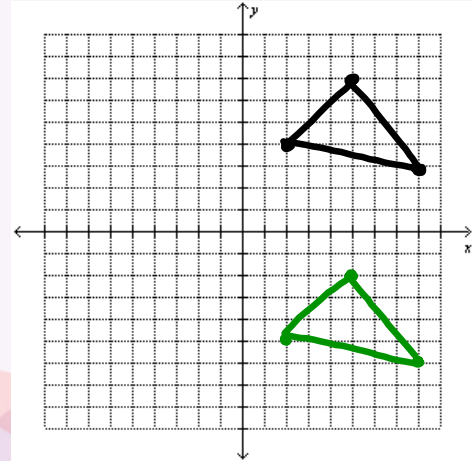
**Example 4**

Use the information below to sketch the image of  $\triangle DEF$  after a translation.

$$D(5,7), E(8,3), F(2,4)$$

$$\text{Translation: } (x, y) \longrightarrow (x, y - 9)$$

*down*

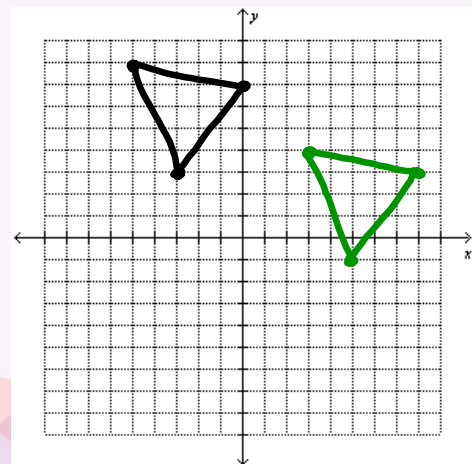
**Example 5**

Use the information below to sketch the image of  $\triangle RST$  after a translation.

$$R(-5,8), S(-3,3), T(0,7)$$

$$\text{Translation: } (x, y) \longrightarrow (x + 8, y - 4)$$

*right down*



### Example 6

Use the information below to sketch the image of  $\triangle LMN$  after a translation.

$$L(-7,-2), M(-1,-1), N(-4,-6)$$

$$\text{Translation: } (x, y) \longrightarrow (x + 9, y)$$

right

