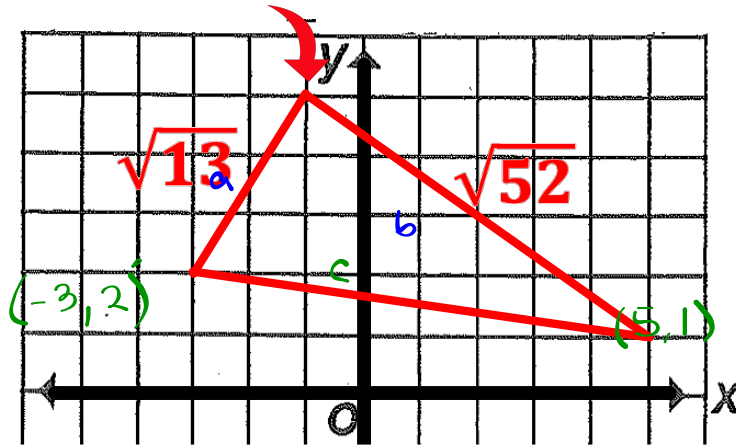


Is this a right angle?



Assuming it is a right angle

$$a^2 + b^2 = c^2$$

$$(\sqrt{13})^2 + (\sqrt{52})^2 = c^2$$

$$13 + 52 = c^2$$

$$65 = c^2$$

$$\sqrt{65} = \sqrt{c^2}$$

$$8.1 = c$$

If this is actually a right triangle, the hypotenuse = 8.1 units

Is side c actually 8.1 units?

$$8 \langle \begin{matrix} 5, 1 \\ -3, 2 \end{matrix} \rangle$$

$$a^2 + b^2 = c^2$$

$$8^2 + 1^2 = c^2$$

$$64 + 1 = c^2$$

$$65 = c^2$$

$$\sqrt{65} = \sqrt{c^2}$$

$$8.1 = c$$

Yes, this is a right triangle!

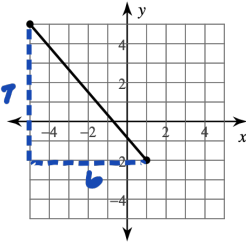
Homework Questions?

The Distance Formula

Date _____ Period _____

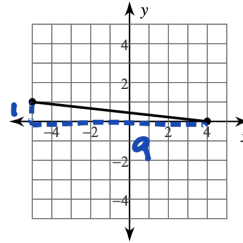
Find the distance between each pair of points. Round your answer to the nearest tenth, if necessary.

1)



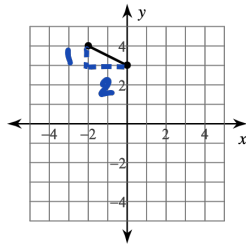
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 7^2 + 6^2 &= c^2 \\ 49 + 36 &= c^2 \\ 85 &= c^2 \\ \sqrt{85} &= c \\ c &= 9.2 \end{aligned}$$

2)



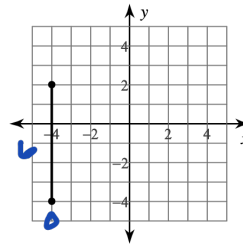
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 1^2 + 8^2 &= c^2 \\ 1 + 64 &= c^2 \\ 65 &= c^2 \\ \sqrt{65} &= c \\ c &= 9.1 \end{aligned}$$

3)



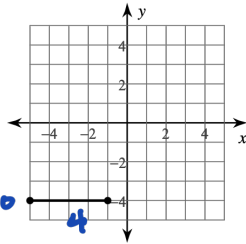
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 1^2 + 2^2 &= c^2 \\ 1 + 4 &= c^2 \\ 5 &= c^2 \\ \sqrt{5} &= c \\ c &= 2.2 \end{aligned}$$

4)



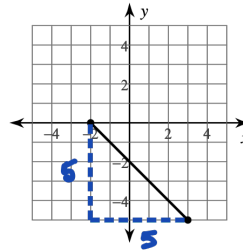
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 0^2 + 6^2 &= c^2 \\ 36 &= c^2 \\ \sqrt{36} &= c \\ c &= 6 \end{aligned}$$

5)



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 4^2 + 0^2 &= c^2 \\ 16 &= c^2 \\ \sqrt{16} &= c \\ c &= 4 \end{aligned}$$

6)



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 5^2 + 4^2 &= c^2 \\ 25 + 16 &= c^2 \\ 41 &= c^2 \\ \sqrt{41} &= c \\ c &= 7.1 \end{aligned}$$

7) $(-2, 3), (-7, -7)$

$$+9 \quad -2, 3 \quad 7+10$$

$$\begin{aligned} 5^2 + 10^2 &= c^2 \\ 25 + 100 &= c^2 \\ 125 &= c^2 \\ 11.2 &= c \end{aligned}$$

9) $(5, 9), (-7, -7)$

$$+12 \quad 5, 9 \quad 7+16$$

$$\begin{aligned} 12^2 + 16^2 &= c^2 \\ 144 + 256 &= c^2 \\ 400 &= c^2 \\ 20 &= c \end{aligned}$$

11) $(-10, -7), (-8, 1)$

$$-2 \quad -10, -7 \quad 7-8$$

$$\begin{aligned} (-2)^2 + (-8)^2 &= c^2 \\ 4 + 64 &= c^2 \\ 68 &= c^2 \\ 8.2 &= c \end{aligned}$$

8) $(2, -9), (-1, 4)$

$$\frac{-9-4}{2-(-1)} = \frac{-13}{3}$$

$$\begin{aligned} 3^2 + (-13)^2 &= c^2 \\ 9 + 169 &= c^2 \\ 178 &= c^2 \\ 13.3 &= c \end{aligned}$$

10) $(8, 5), (-1, 3)$

$$\frac{5-3}{8-(-1)} = \frac{2}{9}$$

$$\begin{aligned} 9^2 + 2^2 &= c^2 \\ 81 + 4 &= c^2 \\ 85 &= c^2 \\ 9.2 &= c \end{aligned}$$

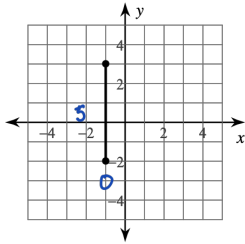
12) $(-6, -10), (-2, -10)$

$$\frac{-10-(-10)}{-6-(-2)} = \frac{0}{-4}$$

$$\begin{aligned} (-4)^2 + 0^2 &= c^2 \\ 16 + 0 &= c^2 \\ 16 &= c^2 \\ 4 &= c \end{aligned}$$

Find the distance between each pair of points. Give exact distances, write answers in radical form.

13)



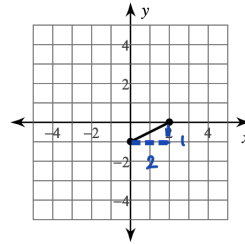
$$a^2 + b^2 = c^2$$

$$0^2 + 5^2 = c^2$$

$$25 = c^2$$

$$5 = c$$

14)



$$a^2 + b^2 = c^2$$

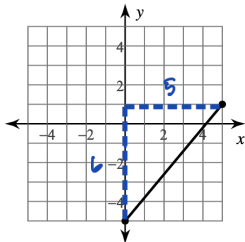
$$2^2 + 1^2 = c^2$$

$$4 + 1 = c^2$$

$$5 = c^2$$

$$\sqrt{5} = c$$

15)



$$a^2 + b^2 = c^2$$

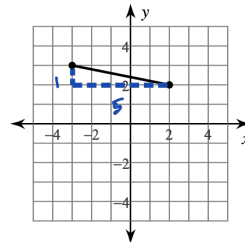
$$5^2 + 5^2 = c^2$$

$$25 + 25 = c^2$$

$$50 = c^2$$

$$\sqrt{50} = c$$

16)



$$a^2 + b^2 = c^2$$

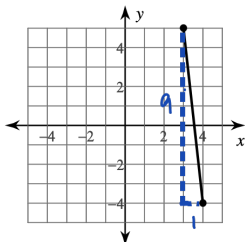
$$5^2 + 1^2 = c^2$$

$$25 + 1 = c^2$$

$$26 = c^2$$

$$\sqrt{26} = c$$

17)



$$a^2 + b^2 = c^2$$

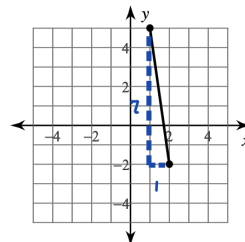
$$1^2 + 9^2 = c^2$$

$$1 + 81 = c^2$$

$$82 = c^2$$

$$\sqrt{82} = c$$

18)



$$a^2 + b^2 = c^2$$

$$1^2 + 7^2 = c^2$$

$$1 + 49 = c^2$$

$$50 = c^2$$

$$\sqrt{50} = c$$

$$5\sqrt{2} = c$$

19) $(0, -2), (-5, -1)$
 $+5 \quad 0, -2 \quad -1$

$$a^2 + b^2 = c^2$$

$$5^2 + (-1)^2 = c^2$$

$$25 + 1 = c^2$$

$$26 = c^2$$

$$\sqrt{26} = c$$

20) $(6, 4), (-5, -1)$

$$\frac{4 - (-1)}{6 - (-5)} = \frac{5}{11}$$

$$a^2 + b^2 = c^2$$

$$11^2 + 5^2 = c^2$$

$$121 + 25 = c^2$$

$$146 = c^2$$

$$\sqrt{146} = c$$

21) $(3, 8), (9, 10)$
 $-6 \quad (3, 8) \quad -2$

$$a^2 + b^2 = c^2$$

$$(-6)^2 + (-2)^2 = c^2$$

$$36 + 4 = c^2$$

$$40 = c^2$$

$$\sqrt{40} = \sqrt{c^2}$$

$$2\sqrt{10} = c$$

22) $(10, 1), (9, -4)$

$$\frac{1 - (-4)}{10 - 9} = \frac{5}{1}$$

$$a^2 + b^2 = c^2$$

$$1^2 + 5^2 = c^2$$

$$1 + 25 = c^2$$

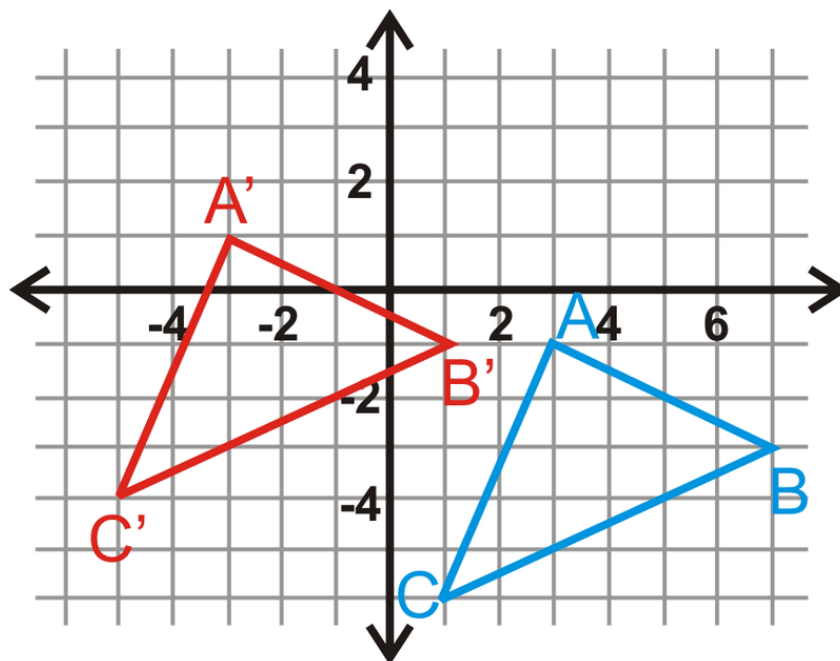
$$26 = c^2$$

$$\sqrt{26} = c$$

Transformations

Transformations move or change a figure.

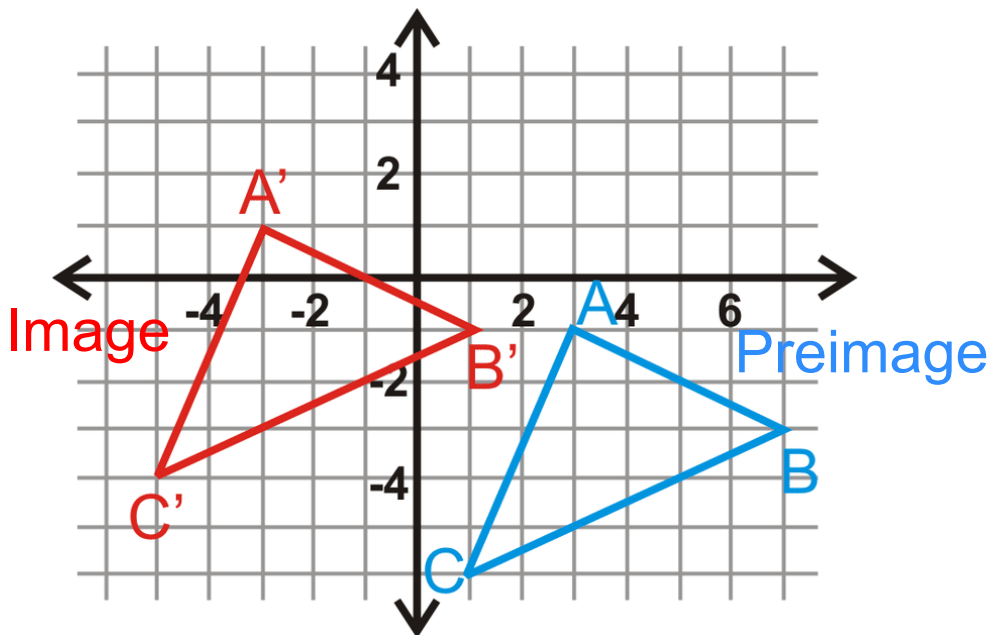
What do we call the figures we transform?



- The **original** figure is called the Pre image
- The **transformed** figure is called the Image

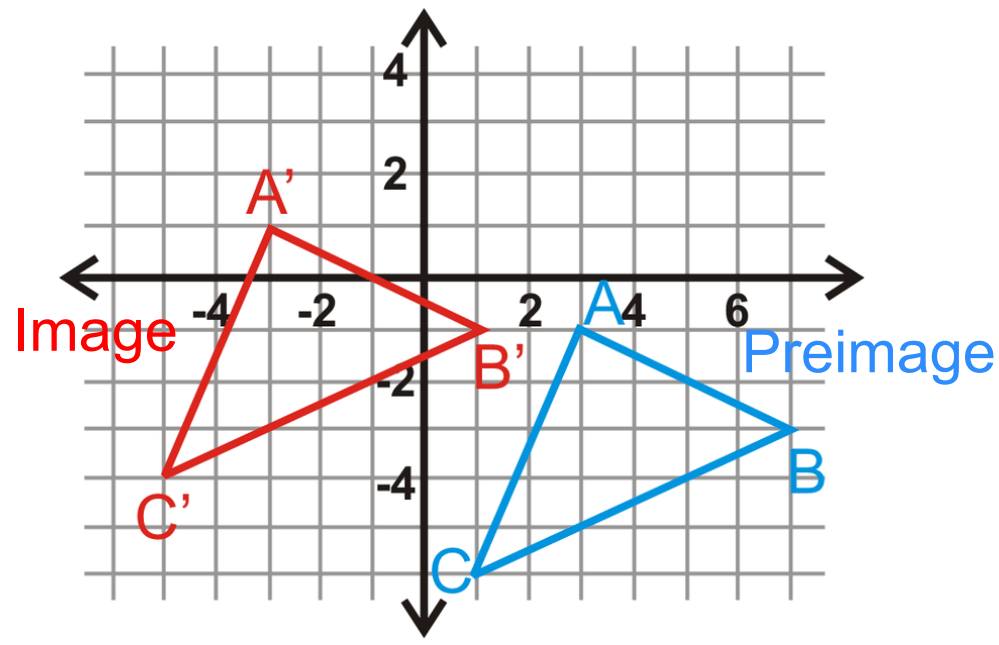
- Every point in the Preimage follows the same rule to get to the Image.

Preimage $\xrightarrow{\text{Rule}}$ Image



- Point A of the Preimage is transformed to Point A', *prime mark*
- we call this point A *prime*.

$$\triangle ABC \xrightarrow{\text{Rule}} \underline{\triangle A'B'C'}$$



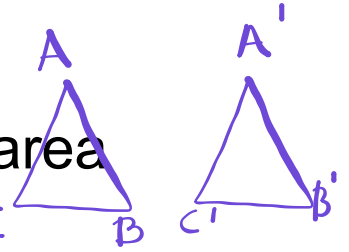
- If Point A' is transformed again, the new point is Point A'',
- we call this point A *double prime*.

We will also be talking about if figures are congruent or similar.

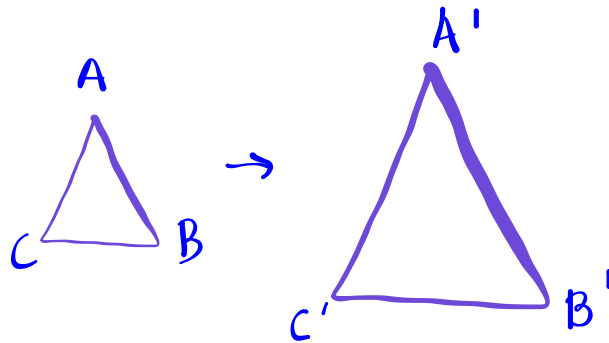
Congruent:

Exactly the same size, lengths, area and angle measures

- lengths are equal
- angle measures are equal



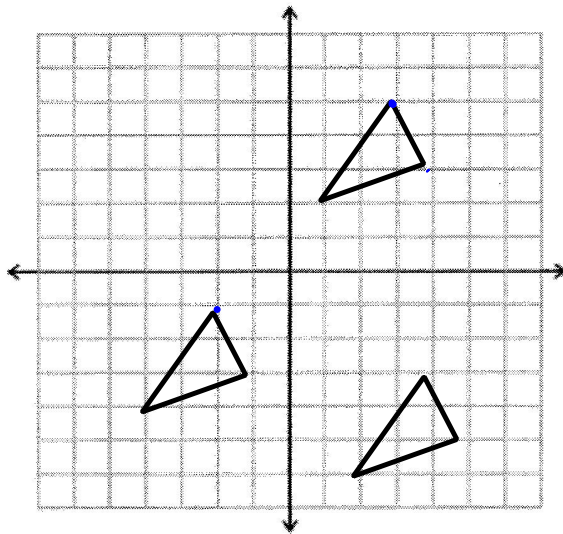
Similar:



Different size, lengths and area changed by a factor, angle measures the same.

Translation

- A transformation that moves the image along a straight line.



Often called a
Slide

Rules for Translations:

Every point of the shape moves:

The same distance

In the same direction

Soooooooo.....

The Image must
be **congruent.**

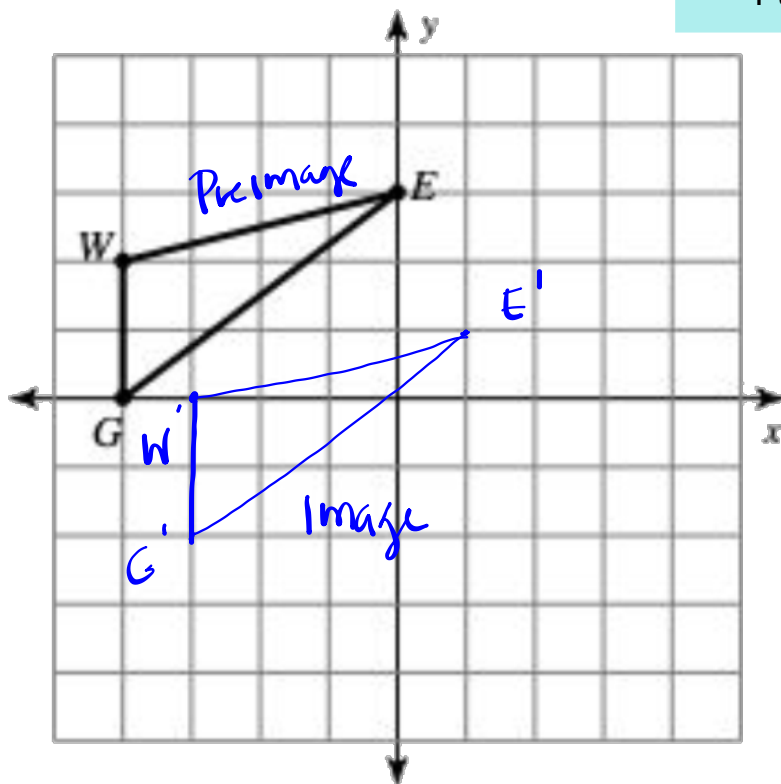
Example #1

Translation

Rule in words

Translate triangle WEG

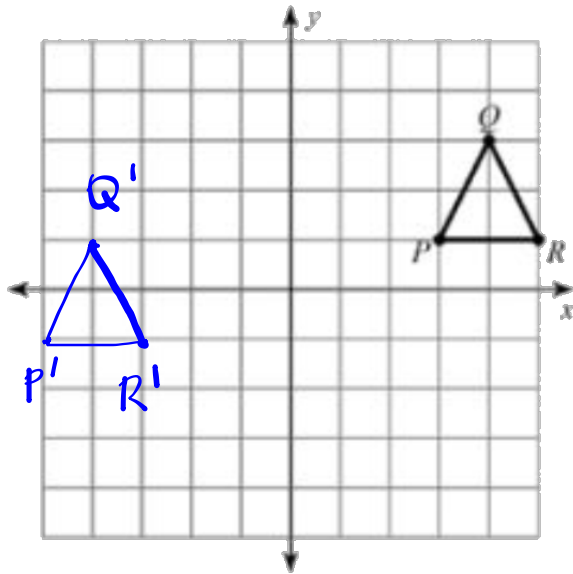
1 unit right and 2 units down



Slide

Example #2

Translation



Arrow notation

$$(x, y) \rightarrow (x - 8, y - 2)$$

Slide

The **rule** describes how you will move each point of the figure.

Positive values translate a figure

up or to the right.

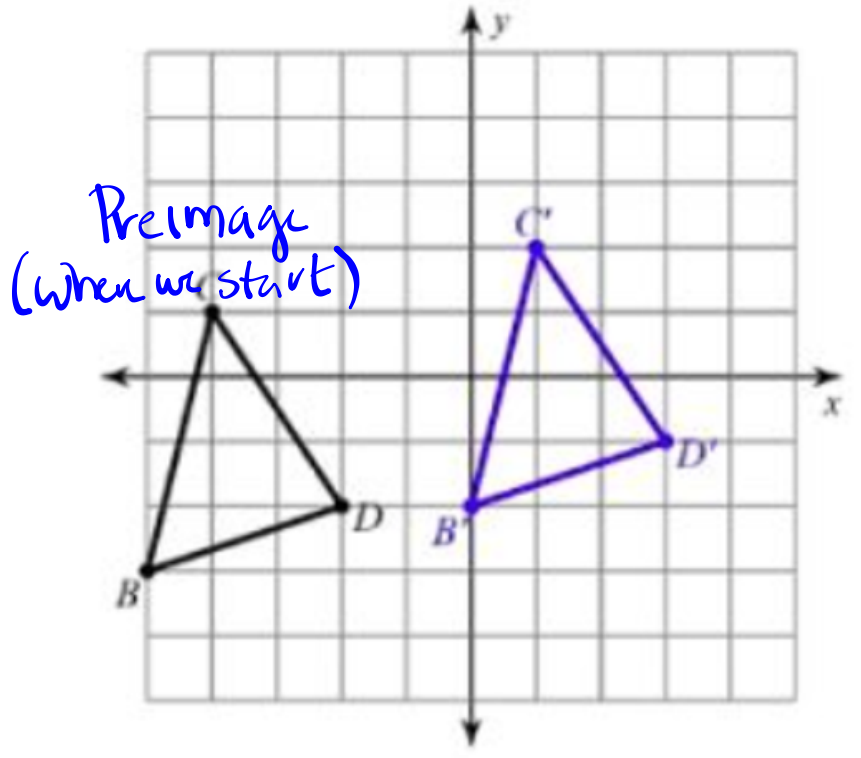
negative values

translate a figure down or to the

left.

Example #3

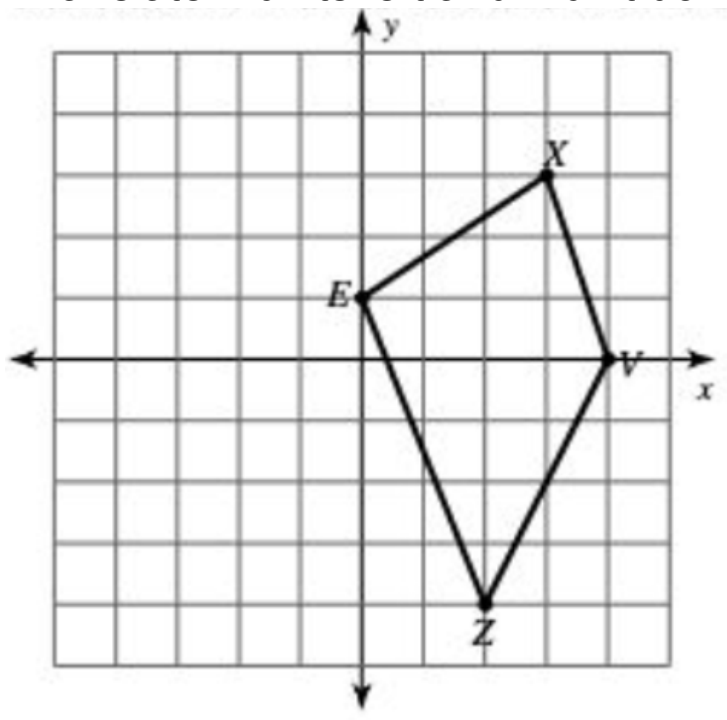
Write the translation that must have occurred.



Example #4

Perform the translation and write the rule in arrow notation.

Translate 4 units left and 1 unit down.



Homework

Finish classwork