you can use a starter sheet or just a blank sheet of paper :)

Starter

Write down the three transformations that we learned yesterday. Make sure to include a brief explanation of each one.

1) Translation: up, down, to the side

Answers

2) Reflection: flip / mirror

3) Rotation: spin / turn

Aug 27-2:59 PM

Todays Goal

Unit 4 Day 2

I can ...

Translate a figure vertically and/or horizontally.

Find the rules of translation.

Reflect a figure over a given line.

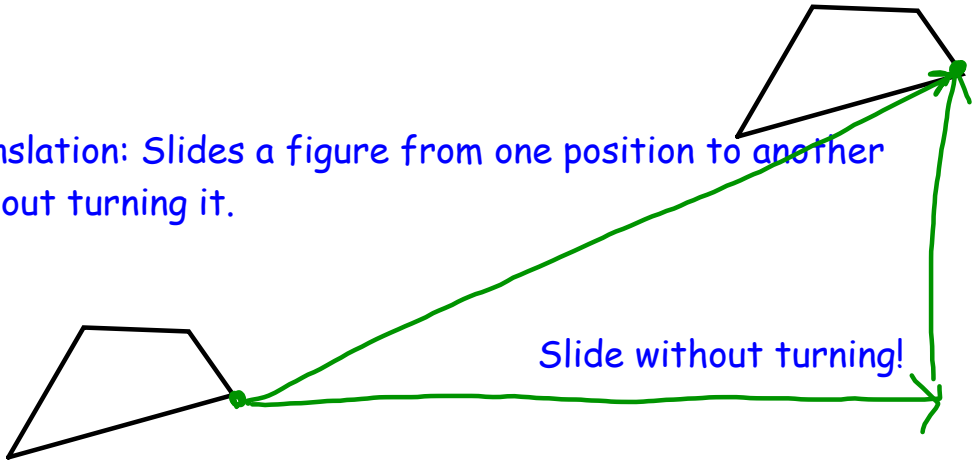
Find the rules for reflection.

Aug 27-2:49 PM

Unit 4 - Day 2
Translations

Transformation: an operation that maps an original geometric figure, the preimage, onto the new figure called the image.

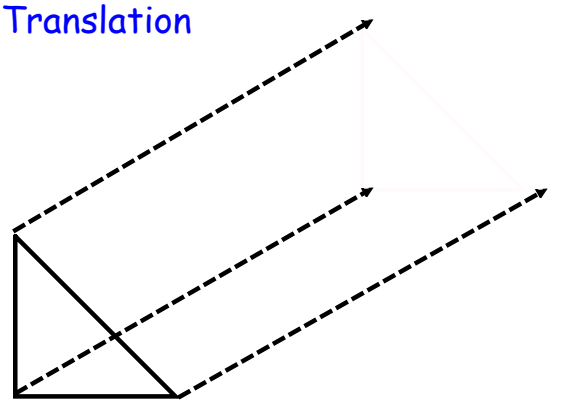
Translation: Slides a figure from one position to another without turning it.



Feb 13-6:27 AM

Translation

Slide without turning



image

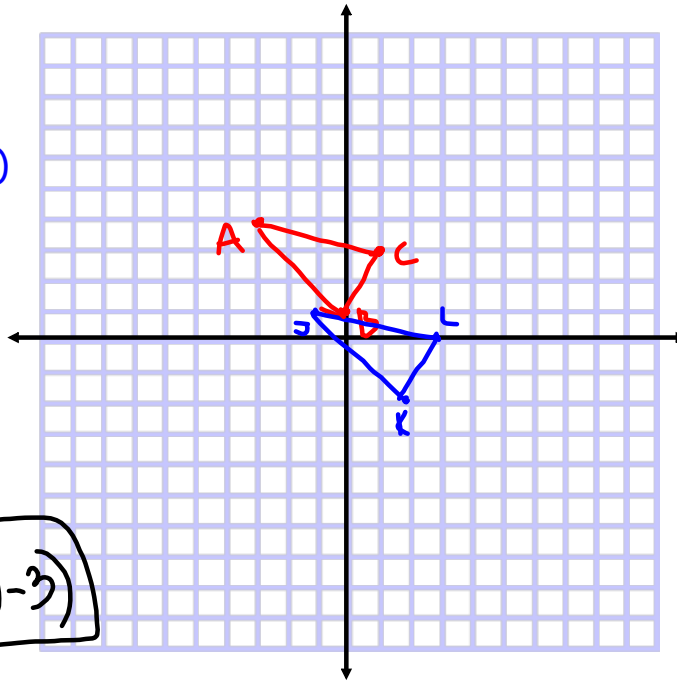
preimage

Translations make congruent figures. Same size same shape, same angles, etc.

Feb 13-6:36 AM

Graph the following points to create two figures.

Figure 1: A(-3,4) B(0,1) C(1,3)
Figure 2: J(-1,1) K(2,-2) L(3,0)



Translate
2 to the right
3 down

$(x,y) \rightarrow (x+2, y-3)$

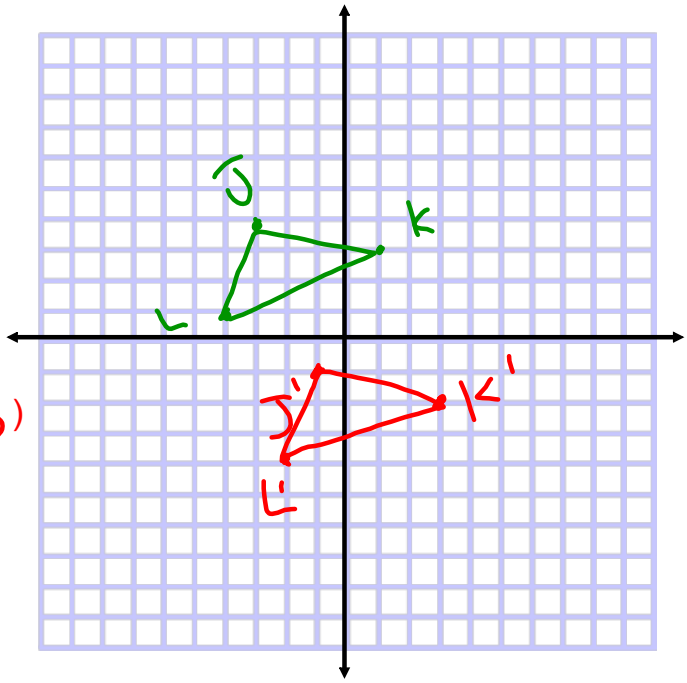
Feb 13-6:40 AM

Graph $\triangle JKL$ with vertices $J(-3, 4)$, $K(1, 3)$, and $L(-4, 1)$. Then graph the image of $\triangle JKL$ after a translation 2 units right and 5 units down. Write the coordinates of its vertices.

J(-3,4) ⟶ J'(-1,-1)
K(1, 3) ⟶ K'(3,-2)
L(-4,1) ⟶ L'(-2,-4)

Rule:

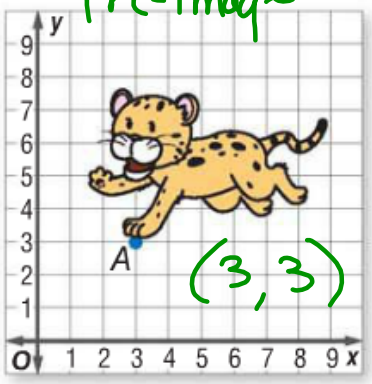
(x, y) --------> (x+2, y-5)



Feb 13-6:42 AM

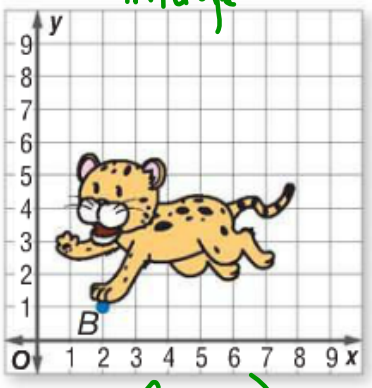
A computer image is being translated to create the illusion of movement. Use translation notation to describe the translation from point *A* to point *B*.

Pre-Image



(3, 3)

Image



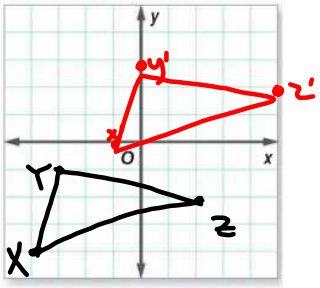
(2, 1)

$(x, y) \rightarrow (x-1, y-2)$

Feb 13-6:50 AM

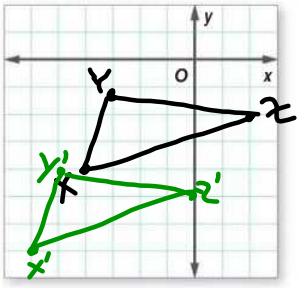
Graph $\triangle XYZ$ with vertices $X(-4, -4)$, $Y(-3, -1)$, and $Z(2, -2)$. Then graph the image of $\triangle XYZ$ after each translation, and write the coordinates of its vertices. (Example 1)

1. 3 units right and 4 units up



$(x, y) \rightarrow (x+3, y+4)$

2. 2 units left and 3 units down



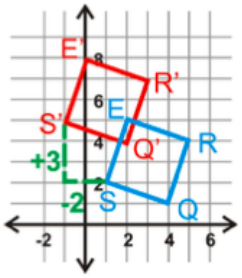
$(x, y) \rightarrow (x-2, y-3)$

Feb 13-6:51 AM

preimage → image

Example 1: Graph square $S(1,2), Q(4,1), R(5,4)$ and $E(2,5)$. Find the image after the translation $(x,y) \rightarrow (x-2, y+3)$. Then, graph and label the image.

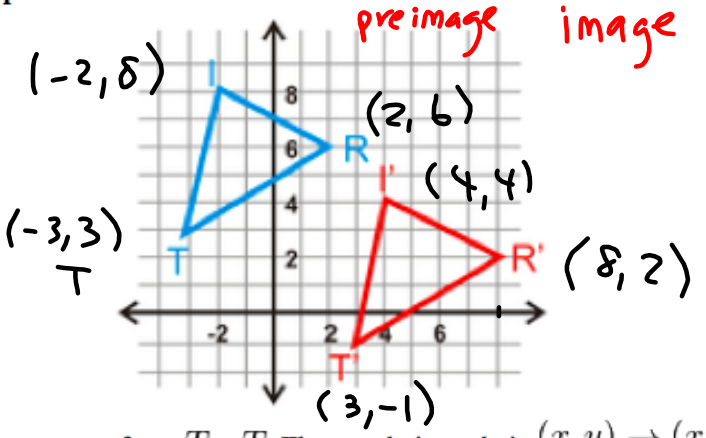
Solution: We are going to move the square to the left 2 and up 3.



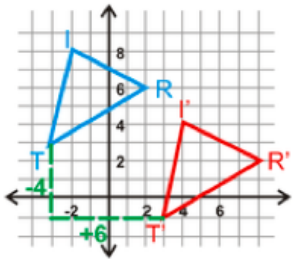
$$(x,y) \rightarrow (x-2, y+3)$$
$$S(1,2) \rightarrow S'(-1,5)$$
$$Q(4,1) \rightarrow Q'(2,4)$$
$$R(5,4) \rightarrow R'(3,7)$$
$$E(2,5) \rightarrow E'(0,8)$$

Oct 25-8:57 PM

Example 2: Find the translation rule for $\triangle TRI$ to $\triangle T'R'I'$.

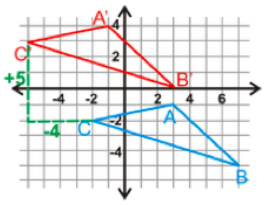


Solution: Look at the movement from T to T'. The translation rule is $(x,y) \rightarrow (x+6, y-4)$.



Mar 6-8:33 PM

Example 4: Triangle $\triangle ABC$ has coordinates $A(3,-1), B(7,-5)$ and $C(-2,-2)$. Translate $\triangle ABC$ to the left 4 units and up 5 units. Determine the coordinates of $\triangle ABC$.



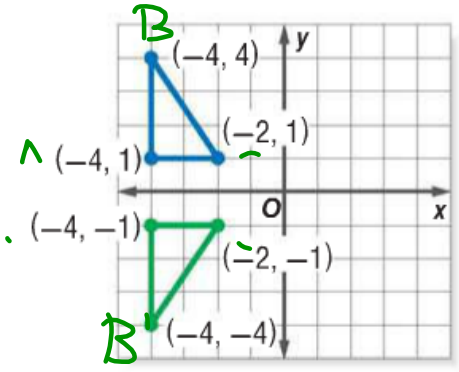
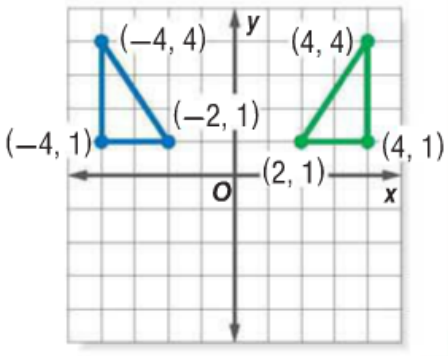
Solution: Graph $\triangle ABC$. To translate $\triangle ABC$, subtract 4 from each x value and add 5 to each y value.

$A(3,-1) \rightarrow (3-4,-1+5) = A(-1,4)$
$B(7,-5) \rightarrow (7-4,-5+5) = B(3,0)$
$C(-2,-2) \rightarrow (-2-4,-2+5) = C(-6,3)$

The rule would be $(x,y) \rightarrow (x-4, y+5)$.

Mar 6-8:37 PM

Reflections

	Over the x-axis	Over the y-axis
Words	To reflect a figure over the *x*-axis, multiply the *y*-coordinates by −1.	To reflect a figure over the *y*-axis, multiply the *x*-coordinates by −1.
Symbols	$(x, y) \rightarrow (x, -y)$	$(x, y) \rightarrow (-x, y)$
Models		

Feb 14-8:28 AM

A reflection is a mirror image of the original figure. It is the result of a transformation of a figure over a line of reflection.

Example #1

Triangle *ABC* has vertices *A*(5, 2), *B*(1, 3), and *C*(−1, 1). Graph the figure and its reflected image over the *x*-axis. Then find the coordinates of the vertices of the reflected image.

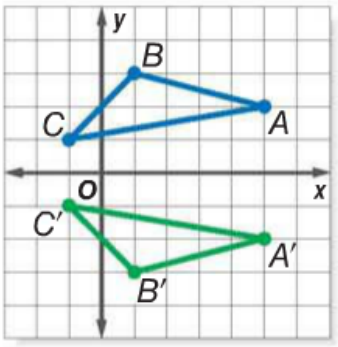
$(x, y) \rightarrow (x, -y)$

Find the coordinates

A'

B'

C'



Point *A* is 2 units above the *x*-axis, . . .

. . . so point *A′* is plotted 2 units below the *x*-axis

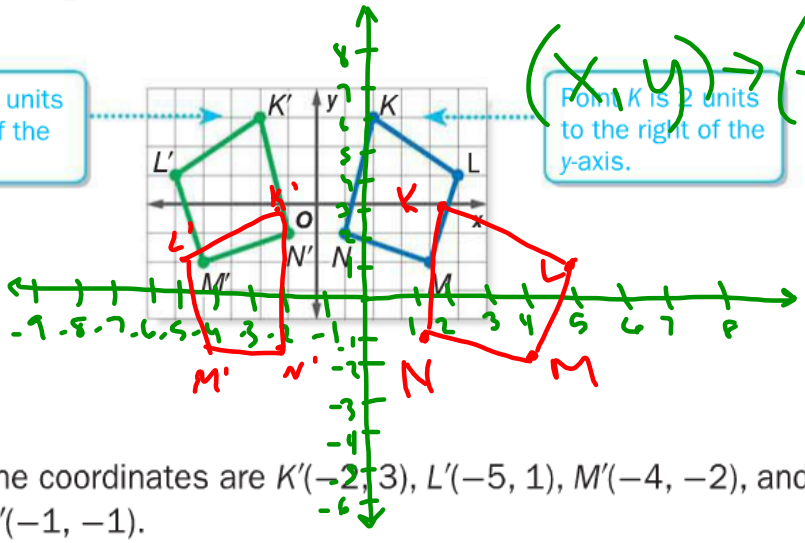
Feb 14-8:30 AM

Quadrilateral *KLMN* has vertices *K*(2, 3), *L*(5, 1), *M*(4, −2), and *N*(1, −1). Graph the figure and its reflection over the *y*-axis. Then find the coordinates of the vertices of the reflected image.

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

Point *K′* is 2 units to the left of the *y*-axis.

Point *K* is 2 units to the right of the *y*-axis.



The coordinates are *K′*(−2, 3), *L′*(−5, 1), *M′*(−4, −2), and *N′*(−1, −1).

Feb 14-8:35 AM

Feb 12-8:35 AM