

Transformations

Interactive Notes

TRANSLATIONS

A transformation in which each point of a figure moves the same _____ in the same _____.

In a translation, the pre-image & image are _____.

The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

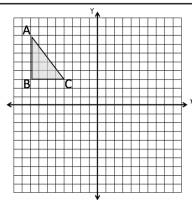
Pre-Image A (____) B (____) C (____)

Image $(x + 5, y + 2)$ A' (____) B' (____) C' (____)

In words, describe the translation.

Image $(x + 8, y - 8)$ A'' (____) B'' (____) C'' (____)

In words, describe the translation.



Using two different colored pencils, graph the new images. Make sure to label both figures.

What rule could be used to translate the figure so it would be located in quadrant 3?
(____, _____)

DILATIONS

A transformation in which each point of a figure _____ or _____ with respect to a fixed point, called the _____.

In a translation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides are _____.

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

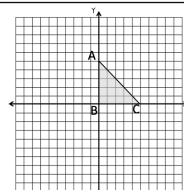
Pre-Image A (____) B (____) C (____)

Image $(2x, 2y)$ A' (____) B' (____) C' (____)

In words, describe the dilation.

Image $(\frac{5}{2}x, \frac{1}{2}y)$ A'' (____) B'' (____) C'' (____)

In words, describe the dilation.



Using two different colored pencils, graph the new images. Make sure to label both figures.

Compare the area of the pre-image to the image. Did the area double in size?

ROTATIONS

A transformation in which a figure is _____ through a given angle, called the _____, and in a given direction about a fixed point, called the _____.

In a rotation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

90° Clockwise $(x, y) \rightarrow (y, -x)$ 90° Counter Clockwise $(x, y) \rightarrow (-y, x)$ 180° Rotation $(x, y) \rightarrow (-x, -y)$

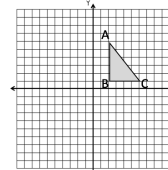
Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image Coordinates A (____) B (____) C (____)

90° Clockwise A' (____) B' (____) C' (____)

90° Counter Clockwise A'' (____) B'' (____) C'' (____)

180° Rotation A''' (____) B''' (____) C''' (____)



Using three different colored pencils, graph the new images. Make sure to label all of the figures.

What would the coordinates be if the pre-image was rotated 270° clockwise?

REFLECTIONS

A transformation in which a figure is _____ in a line, called the _____.

In a rotation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

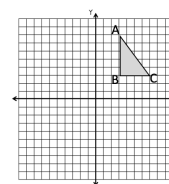
Reflection in the x-axis $(x, y) \rightarrow (x, -y)$ Reflection in the y-axis $(x, y) \rightarrow (-x, y)$

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image Coordinates A (____) B (____) C (____)

Reflection in the x-axis A' (____) B' (____) C' (____)

Reflection in the y-axis A'' (____) B'' (____) C'' (____)



Using two different colored pencils, graph the new images. Make sure to label all of the figures.

A figure has line symmetry if a line, called the _____, divides the figure into two parts that are _____ of each other.

TRANSLATIONS, DILATIONS, ROTATIONS AND REFLECTIONS

This product involves four pages of interactive notes on translations, dilations, rotations and reflections. Each note page provides an opportunity for students to complete the definition, examine and compare the angles and sides of the images, list the pre-image and image coordinates and to describe in words the transformation completed. A graph is provided with the pre-image. Students can use colored pencils to graph the additional images.

An answer key is provided.

TRANSLATIONS

A transformation in which each point of a figure moves the same _____ in the same _____.

In a translation, the pre-image & image are _____.

The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

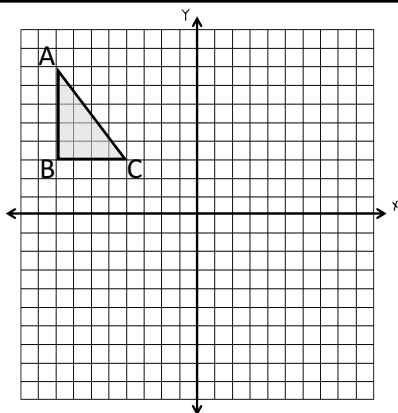
Pre-Image	A (____, ____)	B (____, ____)	C (____, ____)
-----------	----------------	----------------	----------------

Image ($x + 5, y + 2$)	A' (____, ____)	B' (____, ____)	C' (____, ____)
-----------------------------	-----------------	-----------------	-----------------

In words, describe the translation.

Image ($x + 8, y - 8$)	A'' (____, ____)	B'' (____, ____)	C'' (____, ____)
-----------------------------	------------------	------------------	------------------

In words, describe the translation.



Using two different colored pencils, graph the new images. Make sure to label both figures.

What rule could be used to translate the figure so it would be located in quadrant 3?

(_____)

TRANSLATIONS

A transformation in which each point of a figure moves the same _____ in the same _____.

In a translation, the pre-image & image are _____.

The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

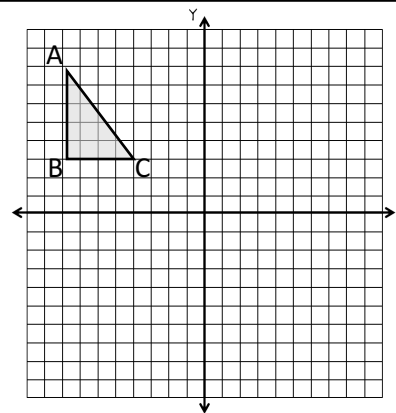
Pre-Image	A (____, ____)	B (____, ____)	C (____, ____)
-----------	----------------	----------------	----------------

Image ($x + 5, y + 2$)	A' (____, ____)	B' (____, ____)	C' (____, ____)
-----------------------------	-----------------	-----------------	-----------------

In words, describe the translation.

Image ($x + 8, y - 8$)	A'' (____, ____)	B'' (____, ____)	C'' (____, ____)
-----------------------------	------------------	------------------	------------------

In words, describe the translation.



Using two different colored pencils, graph the new images. Make sure to label both figures.

What rule could be used to translate the figure so it would be located in quadrant 3?

(_____)

DILATIONS

A transformation in which each point of a figure _____ or _____ with respect to a fixed point, called the _____.

In a translation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides are _____.

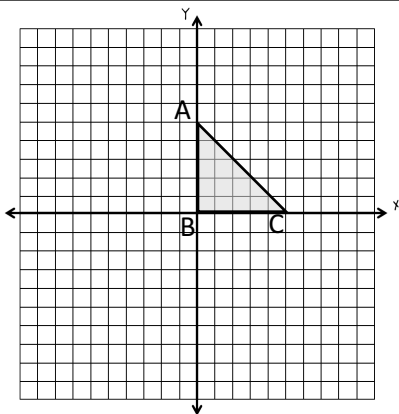
Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

Pre-Image	A (____, ____)	B (____, ____)	C (____, ____)
Image (2x, 2y)	A' (____, ____)	B' (____, ____)	C' (____, ____)

In words, describe the dilation.

Image $(\frac{1}{2}x, \frac{1}{2}y)$	A'' (____, ____)	B'' (____, ____)	C'' (____, ____)
---	------------------	------------------	------------------

In words, describe the dilation.



Using two different colored pencils, graph the new images. Make sure to label both figures.

Compare the area of the pre-image to the image. Did the area double in size?

DILATIONS

A transformation in which each point of a figure _____ or _____ with respect to a fixed point, called the _____.

In a translation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides are _____.

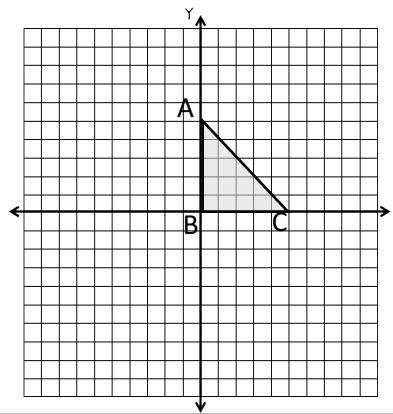
Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

Pre-Image	A (____, ____)	B (____, ____)	C (____, ____)
Image (2x, 2y)	A' (____, ____)	B' (____, ____)	C' (____, ____)

In words, describe the dilation.

Image $(\frac{1}{2}x, \frac{1}{2}y)$	A'' (____, ____)	B'' (____, ____)	C'' (____, ____)
---	------------------	------------------	------------------

In words, describe the dilation.



Using two different colored pencils, graph the new images. Make sure to label both figures.

Compare the area of the pre-image to the image. Did the area double in size?

Complete the notes on transformations. Cut out the notes along the dotted lines and glue them in your notebook.

ROTATIONS

A transformation in which a figure is _____ through a given angle, called the _____, and in a given direction about a fixed point, called the _____.

In a rotation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

90° Clockwise

90° Counter Clockwise

180° Rotation

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

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

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

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image
Coordinates

A (____)

B (____)

C (____)

90°
Clockwise

A' (____)

B' (____)

C' (____)

90° Counter
Clockwise

A'' (____)

B'' (____)

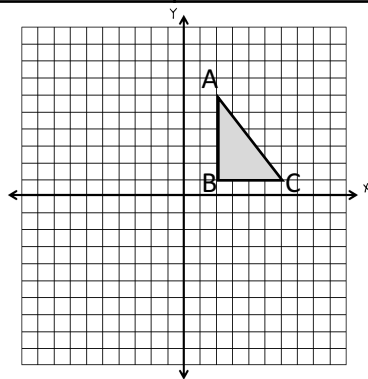
C'' (____)

180°
Rotation

A''' (____)

B''' (____)

C''' (____)



Using three different colored pencils, graph the new images. Make sure to label all of the figures.

What would the coordinates be if the pre-image was rotated 270° clockwise?

ROTATIONS

A transformation in which a figure is _____ through a given angle, called the _____, and in a given direction about a fixed point, called the _____.

In a rotation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

90° Clockwise

90° Counter Clockwise

180° Rotation

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

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

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

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image
Coordinates

A (____)

B (____)

C (____)

90°
Clockwise

A' (____)

B' (____)

C' (____)

90° Counter
Clockwise

A'' (____)

B'' (____)

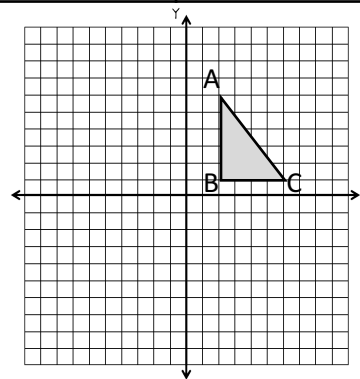
C'' (____)

180°
Rotation

A''' (____)

B''' (____)

C''' (____)



Using three different colored pencils, graph the new images. Make sure to label all of the figures.

What would the coordinates be if the pre-image was rotated 270° clockwise?

Complete the notes on transformations. Cut out the notes along the dotted lines and glue them in your notebook.

REFLECTIONS

A transformation in which a figure is _____, in a line, called the _____.

In a rotation, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

Reflection in the x - axis

Reflection in the y-axis

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

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

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image Coordinates

A (____, ____)

B (____, ____)

C (____, ____)

Reflection in the x-axis

A' (____, ____)

B' (____, ____)

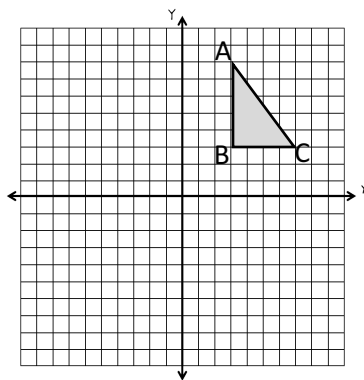
C' (____, ____)

Reflection in the y-axis

A'' (____, ____)

B'' (____, ____)

C'' (____, ____)



Using two different colored pencils, graph the new images. Make sure to label all of the figures.

A figure has line symmetry if a line, called the _____, divides the figure into two parts that are _____ of each other in the line.

REFLECTIONS

A transformation in which a figure is _____, in a line, called the _____.

In a reflection, the pre-image & image are _____.
The corresponding angles have the _____ measurement.
The corresponding sides have the _____ measurement.

Reflection in the x - axis

Reflection in the y-axis

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

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

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image Coordinates

A (____, ____)

B (____, ____)

C (____, ____)

Reflection in the x-axis

A' (____, ____)

B' (____, ____)

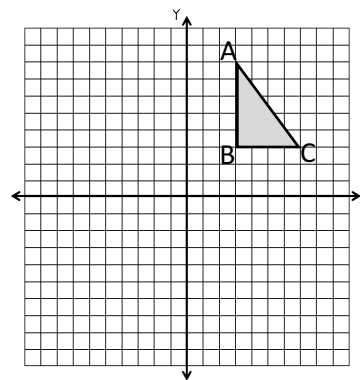
C' (____, ____)

Reflection in the y-axis

A'' (____, ____)

B'' (____, ____)

C'' (____, ____)



Using two different colored pencils, graph the new images. Make sure to label all of the figures.

A figure has line symmetry if a line, called the _____, divides the figure into two parts that are _____ of each other in the line.

Complete the notes on transformations. Cut out the notes along the dotted lines and glue them in your notebook.

TRANSLATIONS

A transformation in which each point of a figure moves the same distance in the same direction.

In a translation, the pre-image & image are congruent.

The corresponding angles have the same measurement.
The corresponding sides have the same measurement.

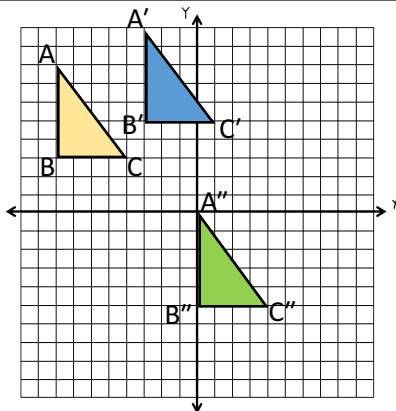
Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

Pre-Image	A <u>(-8, 8)</u>	B <u>(-8, 3)</u>	C <u>(-4, 3)</u>
Image ($x + 5, y + 2$)	A' <u>(-3, 10)</u>	B' <u>(-3, 5)</u>	C' <u>(1, 5)</u>

In words, describe the translation. *The image moved five units to the right and up two units.*

Image ($x + 8, y - 8$)	A'' <u>(0, 0)</u>	B'' <u>(0, -5)</u>	C'' <u>(4, -5)</u>
-----------------------------	-------------------	--------------------	--------------------

In words, describe the translation. *The image moved eight units to the right and down eight units.*



Using two different colored pencils, graph the new images. Make sure to label both figures.

What rule could be used to translate the figure so it would be located in quadrant 3?

Possible Answer:
($x - 1, y - 10$)

DILATIONS

A transformation in which each point of a figure stretches or shrinks with respect to a fixed point, called the center of dilation.

In a translation, the pre-image & image are similar.
The corresponding angles have the same measurement.
The corresponding sides are proportional.

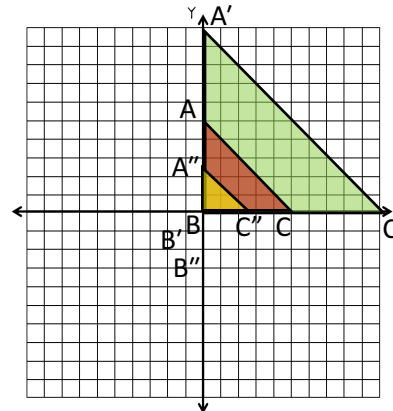
Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create two new translated images.

Pre-Image	A <u>(0, 5)</u>	B <u>(0, 0)</u>	C <u>(5, 0)</u>
Image ($2x, 2y$)	A' <u>(0, 10)</u>	B' <u>(0, 0)</u>	C' <u>(10, 0)</u>

In words, describe the dilation. *The image doubled in size.*

Image ($\frac{1}{2}x, \frac{1}{2}y$)	A'' <u>(0, 2.5)</u>	B'' <u>(0, 0)</u>	C'' <u>(2.5, 0)</u>
---	---------------------	-------------------	---------------------

In words, describe the dilation. *The image is half the size of the pre-image.*



Using two different colored pencils, graph the new images. Make sure to label both figures.

Compare the area of the pre-image to the image. Did the area double in size?

Complete the notes on transformations. Cut out the notes along the dotted lines and glue them in your notebook.

ROTATIONS

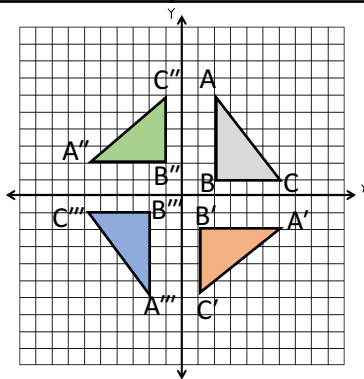
A transformation in which a figure is turned through a given angle, called the angle of rotation, and in a given direction about a fixed point, called the center of rotation.

In a rotation, the pre-image & image are congruent. The corresponding angles have the same measurement. The corresponding sides have the same measurement.

90° Clockwise	90° Counter Clockwise	180° Rotation
$(x, y) \rightarrow (y, -x)$	$(x, y) \rightarrow (-y, x)$	$(x, y) \rightarrow (-x, -y)$

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image Coordinates	A (2,6)	B (2,1)	C (6,1)
90° Clockwise	A' (6,-2)	B' (1,-2)	C' (1,-6)
90° Counter Clockwise	A'' (-6,2)	B'' (-1,2)	C'' (-1,6)
180° Rotation	A''' (-2,-6)	B''' (-2,-1)	C''' (-6,-1)



Using three different colored pencils, graph the new images. Make sure to label all of the figures.

What would the coordinates be if the pre-image was rotated 270°? *The coordinates would be the same as the 90° counter clockwise coordinates.*

REFLECTIONS

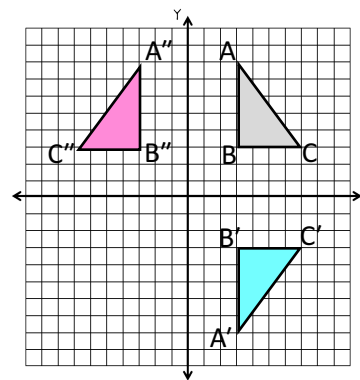
A transformation in which a figure is reflected or flipped in a line, called the line of reflection.

In a reflection, the pre-image & image are congruent. The corresponding angles have the same measurement. The corresponding sides have the same measurement.

Reflection in the x - axis	Reflection in the y-axis
$(x, y) \rightarrow (x, -y)$	$(x, y) \rightarrow (-x, y)$

Look at the graph below. Record the coordinate pairs for the pre-image. Using the pre-image points, create three new rotated images.

Pre-Image Coordinates	A (3,8)	B (3,3)	C (7,3)
Reflection in the x-axis	A' (3,-8)	B' (3,-3)	C' (7,-3)
Reflection in the y-axis	A'' (-3,8)	B'' (-3,3)	C'' (-7,3)



Using two different colored pencils, graph the new images. Make sure to label all of the figures.

A figure has line symmetry if a line, called the line of symmetry, divides the figure into two parts that are reflections of each other in the line.

Thank you for your download!

If you thought this was a quality activity you would use in your classroom, please consider following me on TpT. I appreciate your feedback! By leaving feedback, you can earn TpT credits for future TpT purchases. <https://www.teacherspayteachers.com/Store/The-Clever-Clover>

If you have any questions, please send me an email at clever.clover17@gmail.com

Copyright © 2016 The Clever Clover

This resource was created by The Clever Clover and must be used by the original purchaser for his/her classroom. All rights reserved. It may be printed or photocopied but may not be reproduced, sold, transmitted, or put on the internet without written permission from the author. Additional licenses are available at a discounted price.

Credits:

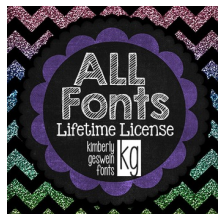
Clever Clover Logo Design by RebeccaB designs <https://www.teacherspayteachers.com/Store/Rebeccab-Designs>

Fonts by KG Fonts <https://www.teacherspayteachers.com/Store/Kimberly-Geswein-Fonts>

Black Graph paper by The EnlightenedElephant <https://www.teacherspayteachers.com/Store/The-Enlightened-Elephant>

Frame by Lovin Lit <http://www.teacherspayteachers.com/Store/Lovin-Lit>

Background & Frame by <https://www.teacherspayteachers.com/Store/I-Teach-Whats-Your-Superpower-Megan-Favre>



Created by

