GEOMETRY 2022 NAME: _____

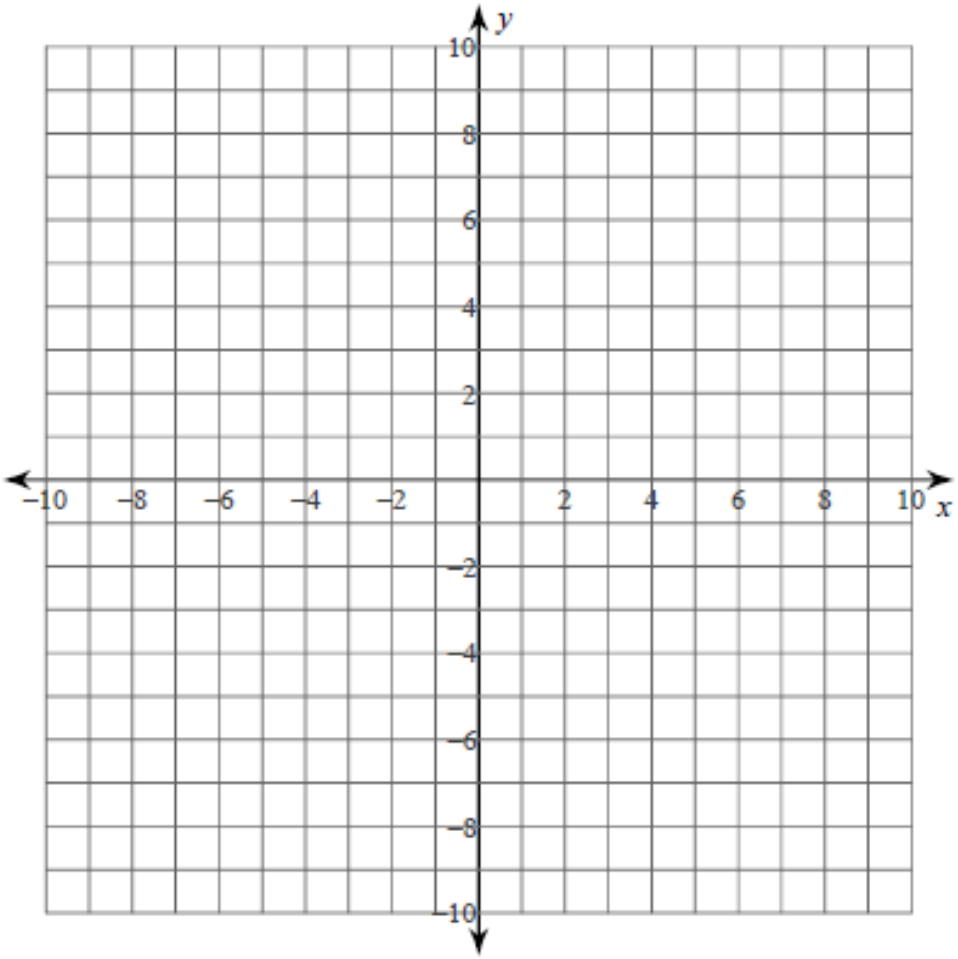
UNIT 1 AGENDA – TRANSFORMATIONS

DATE	DAY	LESSON	PAGES	HOMEWORK
MON 8/1		Welcome to Geometry! Getting to know you!		Create DeltaMath login
TUES 8/2	1.1	Graphing Points	2 – 5	**DeltaMath HW 1.1** Due 8/11 @ 8:20 AM before quiz
WED 8/3	1.2	Translations	6 – 9	
THUR 8/4	1.3	Reflections, Day 1	10 – 12	
FRI 8/5	1.4	Reflections, Day 2	13 – 15	
MON 8/8	1.5	Activity – Translations & Reflections	----------	
TUES 8/9	1.6	Rotations	16 – 17	
WED 8/10	1.7	Review for Quiz Transformations Partner Activity	18 – 19	Finish Quiz Review & DM due TOMORROW
THURS 8/11	1.8	**QUIZ** Intro to Geo & Transformations	----------	**DeltaMath HW 1.2** Due 8/18 @ 8:20 AM before test
FRI 8/12	1.9	Dilations	20 – 22	
MON 8/15	1.10	Composition of Transformations	23 – 25	
TUES 8/16	1.11	Test Review – Task Cards	27 – 29 Test Review	
WED 8/17	1.12	Warm Up & Test Review	26 – 29 Test Review	Finish Test Review & DM due TOMORROW
THURS 8/18	1.13	**TEST TODAY!!!! GOOD LUCK!!!**	----------	

Agenda is subject to change!!!

Geometry **Name:** _____

Coordinate Plane & Graphing Notes **Date:** _____



X-Axis:

Y-Axis:

Origin:

Quadrants:

Ordered Pair:

Plot the points on the graph. Label each point and tell what quadrant/axis it falls into.

A (1, 3) Quadrant: ____

B (-1, -3) Quadrant: ____

C (1, -3) Quadrant: ____

D (-1, 3) Quadrant: ____

E (0, 8) Axis: ____

F (8, 0) Axis: ____

G (-2, -10) Quadrant: ____

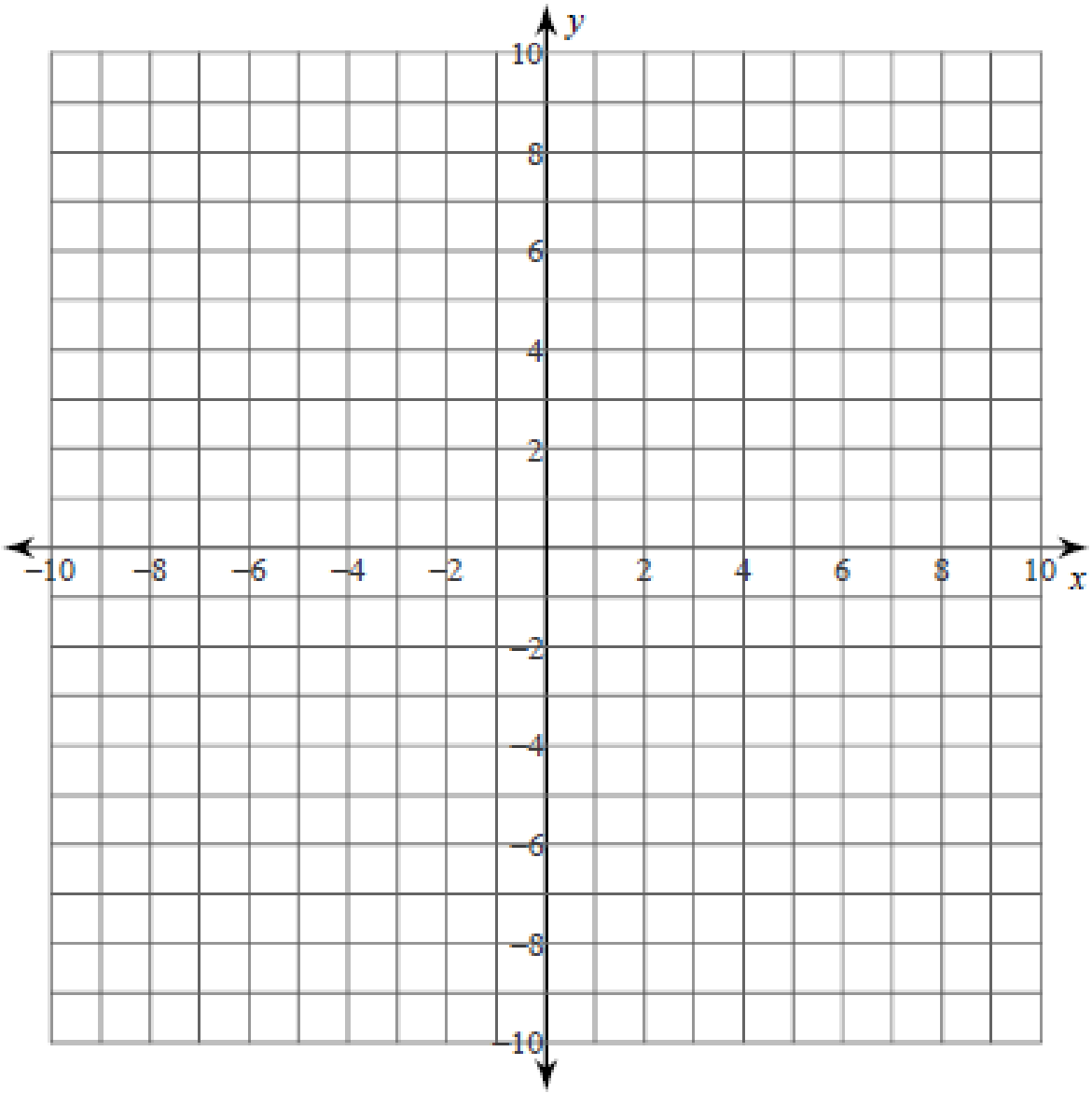
H (0, -5) Quadrant: ____

I (6, -2) Quadrant: ____

J (-8, 0) Quadrant: ____

K (-10, 10) Quadrant: ____

L (-9, 3) Quadrant: ____



Write the coordinates of each point on the graph. Tell what quadrant/axis it falls into.

A _____ Quadrant: _____

B _____ Quadrant: _____

C _____ Quadrant: _____

D _____ Quadrant: _____

E _____ Quadrant: _____

F _____ Quadrant: _____

G _____ Quadrant: _____

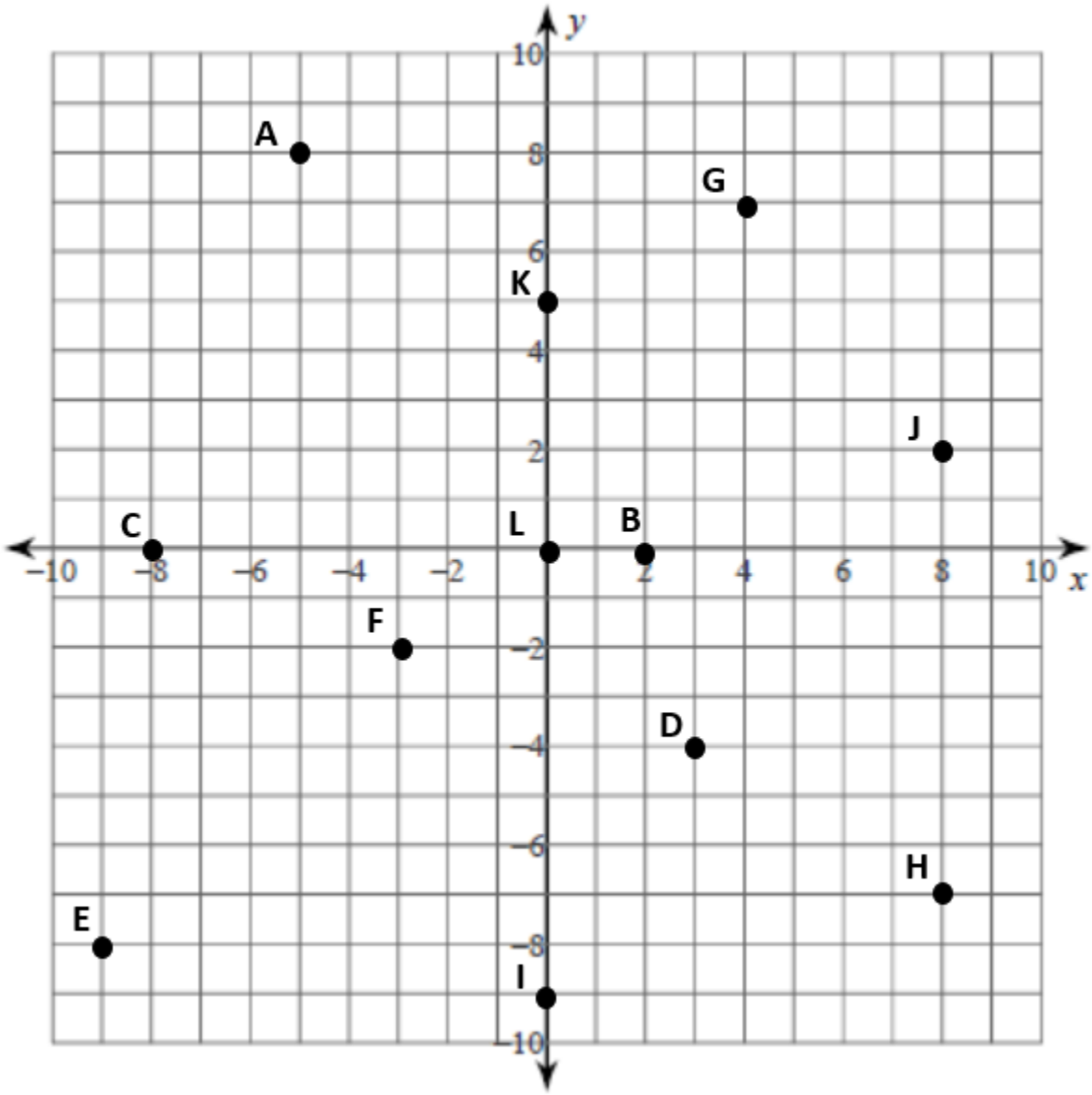
H _____ Quadrant: _____

I _____ Quadrant: _____

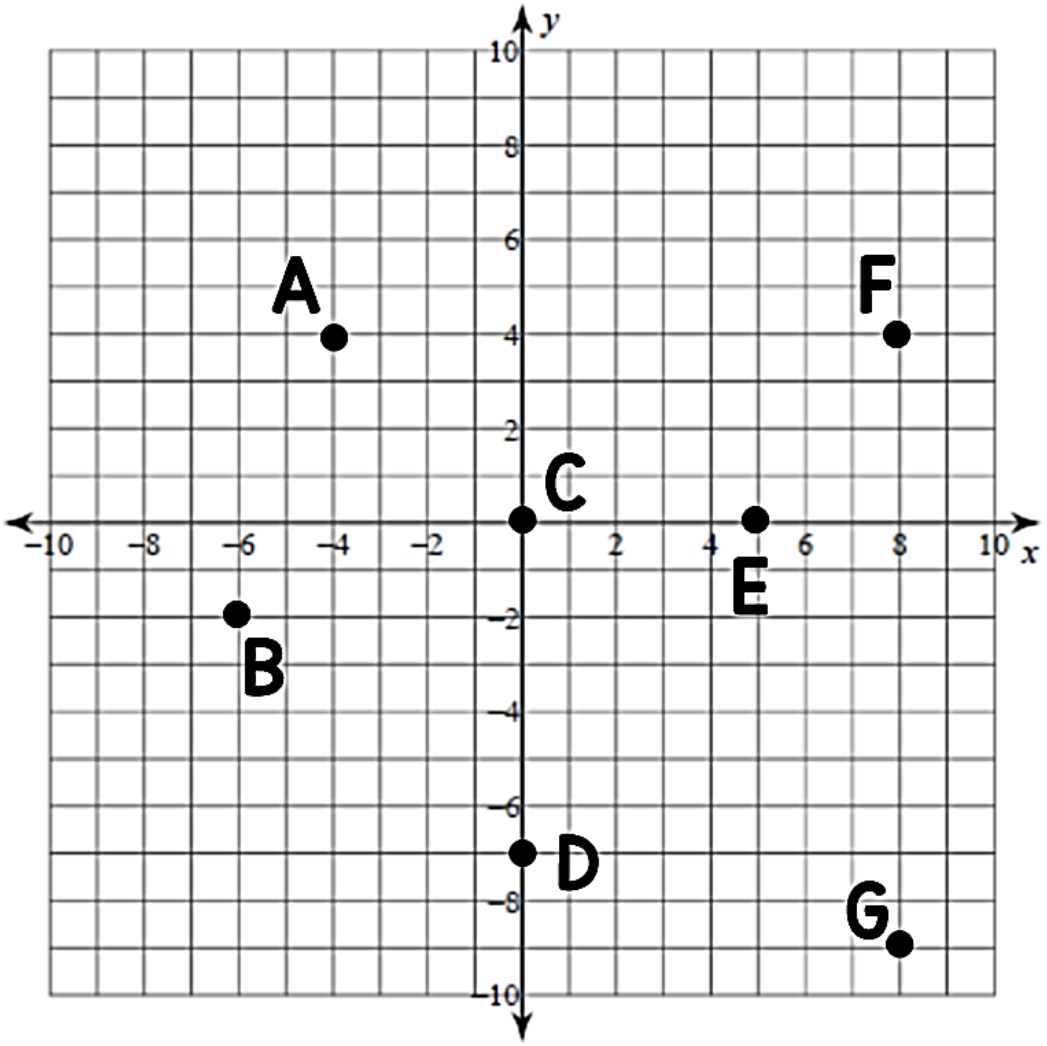
J _____ Quadrant: _____

K _____ Quadrant: _____

L _____ Quadrant: _____



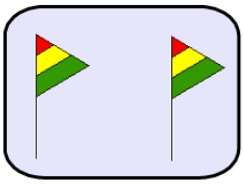
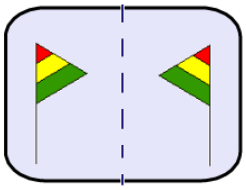
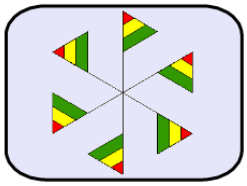
PUTTING IT ALL TOGETHER



1. Which point is located on the origin?
2. Which point is on the x-axis (not including the point on the origin)?
3. Which point is located at (-6, -2)?
4. Which point is in Quadrant IV?
5. Plot point H at (4, -4).
6. Plot point J at (-3, 0).
7. What are the coordinates of point F?
8. What are the coordinates of point D?

Geometry
Translations

Name: _____
Date: _____

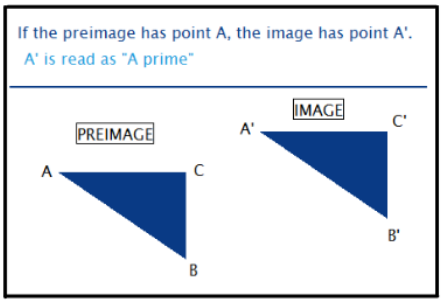




Transformation: The _____, or _____, of all points of a figure in a plane according to a common operation, such as translation, reflection or rotation.

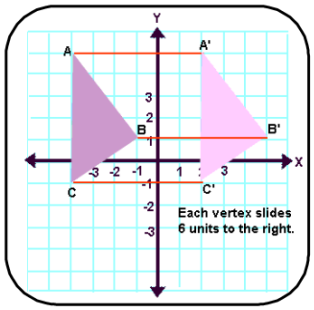
Pre-image: A figure _____ a transformation has taken place.

Image: The figure that results _____ a transformation.

Isometry: A transformation that preserves _____.

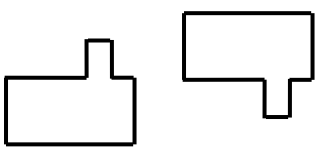
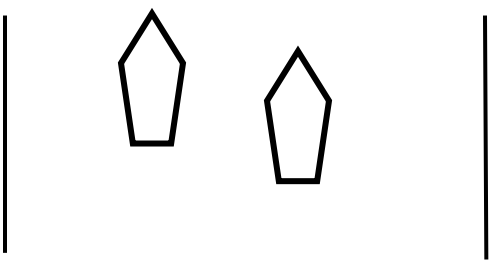
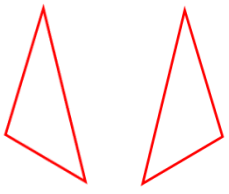


- A _____ is a transformation where all the points of a figure are moved the same _____ in the same _____.
- The distance and direction are indicated by a ray called the _____ _____.



- A vector is a quantity that has both _____ and _____, and can be thought of as a line with a starting point and an endpoint.
- A translation is an _____ so the image of a translated figure is _____ to the preimage.

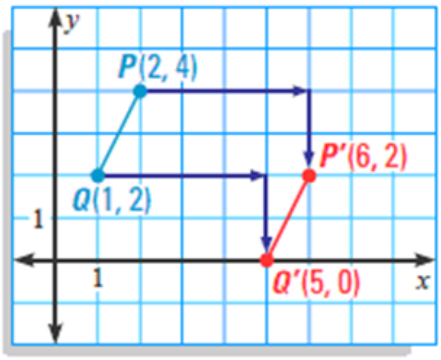
Tell whether each transformation appears to be a translation and explain.

Translations in the Coordinate Plane

Often the rule for the translation will be given as $(x, y) \rightarrow (x + a, y + b)$. This is a shift a units horizontally in the x-direction and b units vertically in the y-direction.

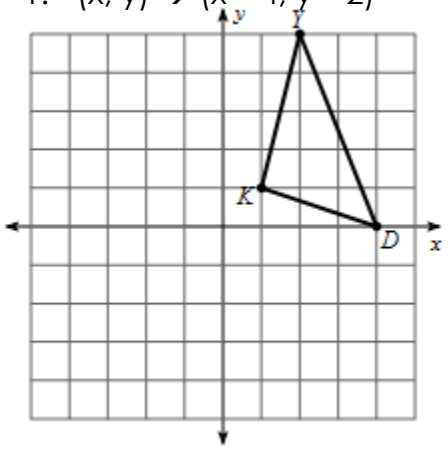
For example, in the coordinate plane to the right shows the translation $(x, y) \rightarrow (x + 4, y - 2)$ shifts each point 4 units to the right and 2 units down.



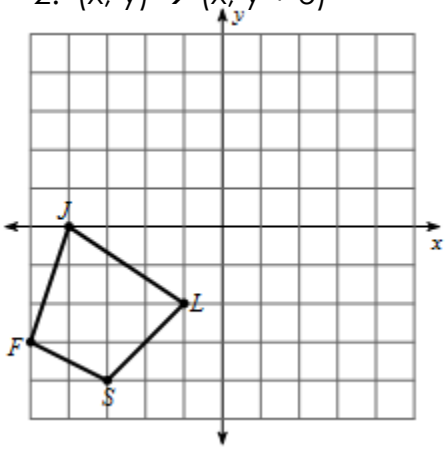
Drawing Translations in the Coordinate Plane

Translate the figure with the given vertices using the rule.

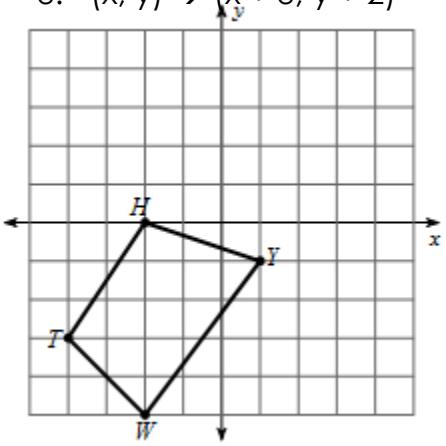
1. $(x, y) \rightarrow (x - 4, y - 2)$



2. $(x, y) \rightarrow (x, y + 5)$

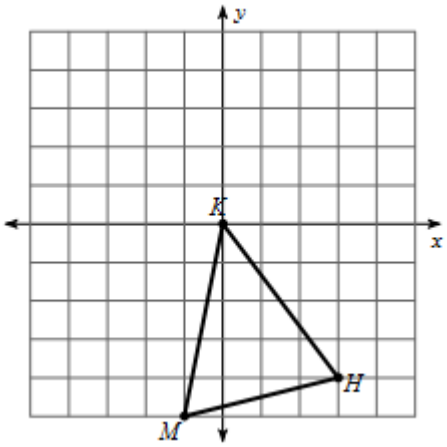


3. $(x, y) \rightarrow (x + 3, y + 2)$

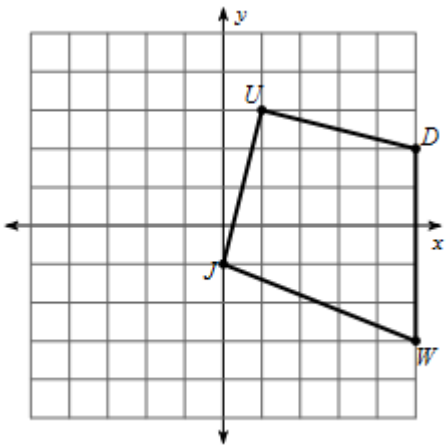


What about this notation? These are called vectors!

8. $\langle 2, 3 \rangle$



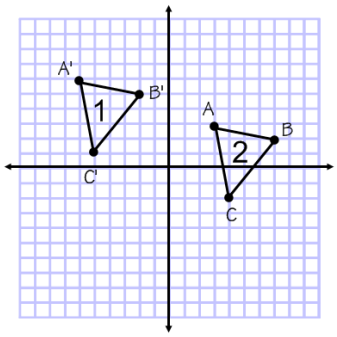
9. $\langle -4, 0 \rangle$



Geometry
Classwork – Translations

Name: _____
Date: _____

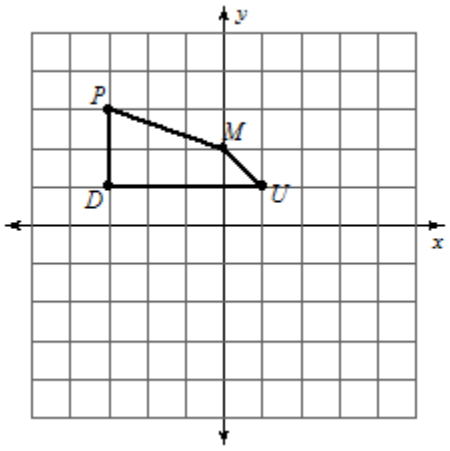
1. Which is the image and which is the pre-image (1 or 2)?



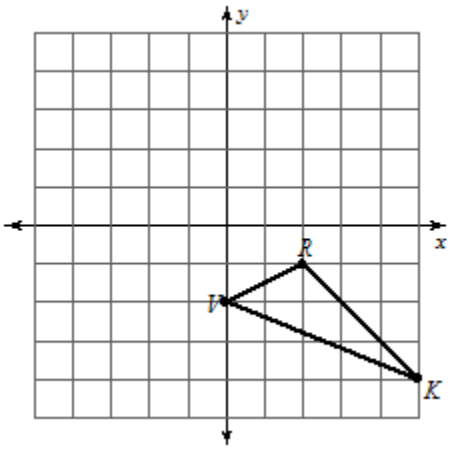
Pre-image _____ Image _____

How do you know? _____

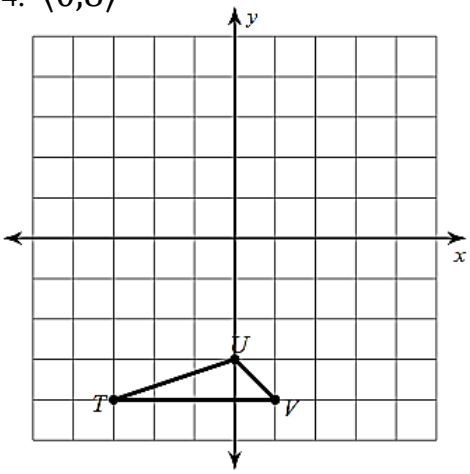
2. (x, y) → (x + 3, y – 5)



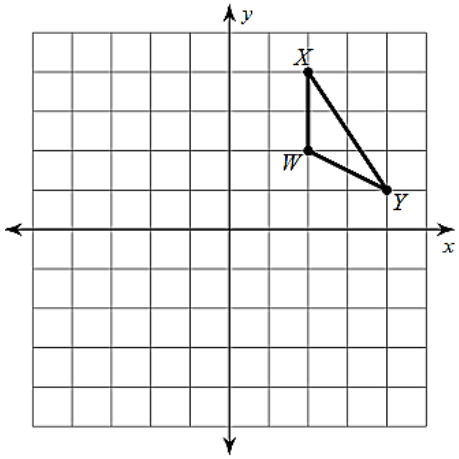
3. $\langle -4,4 \rangle$



4. $\langle 0,8 \rangle$



5. (x, y) → (x – 4, y)



6. Use the translation (x, y) → (x + 5, y – 9) for the questions below.

What is the translation vector? _____

What is the image of A (-6, 3)? _____ What is the image of B (4, 8)? _____

What is the image of A' from above, which would be called A''? _____

What is the pre-image of K'(12, 7)? _____ (*Think about this – you want to find K)

7. If the vertices of ΔABC are A(-6, -7), B(-3, -1), and C(5, 2), find the vertices of ΔA'B'C' after each of the translations below.

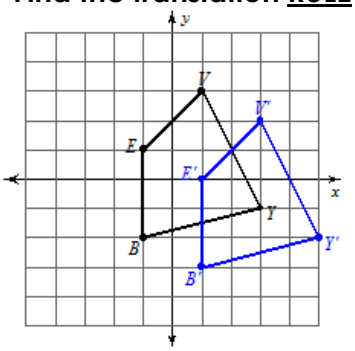
a. (x, y) → (x – 2, y – 7) A' = _____ , B' = _____ , C' = _____

b. (x, y) → (x, y - 3) A' = _____ , B' = _____ , C' = _____

c. (x, y) → (x + 5, y + 8) A' = _____ , B' = _____ , C' = _____

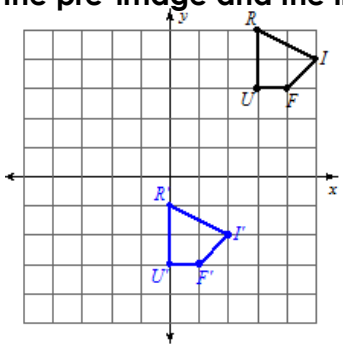
8. Find the translation <u>RULE</u> between the pre-image and the image.

a.



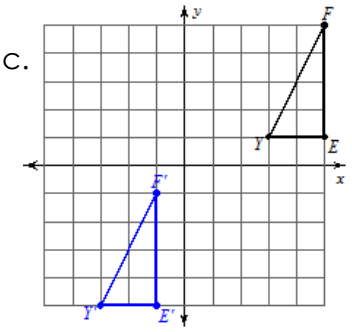
(x, y) → _____

b.



(x, y) → _____

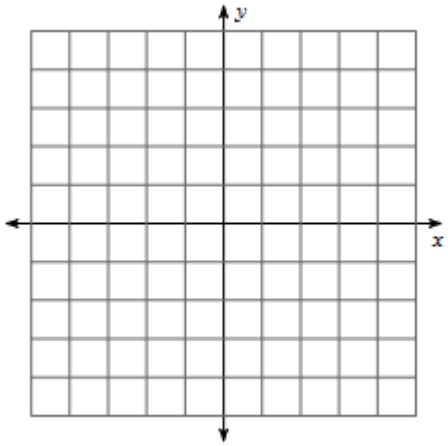
c.



(x, y) → _____

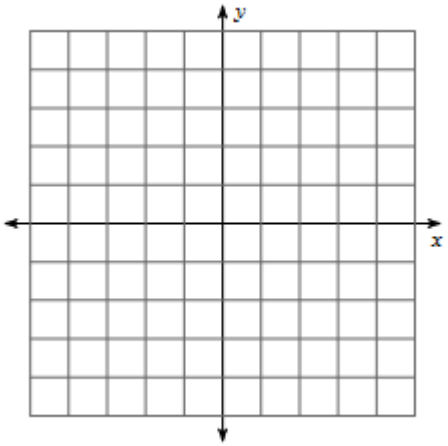
9. A(-4, -4), B(-2, -3), C(-1, 3);

(x, y) → (x + 5, y)



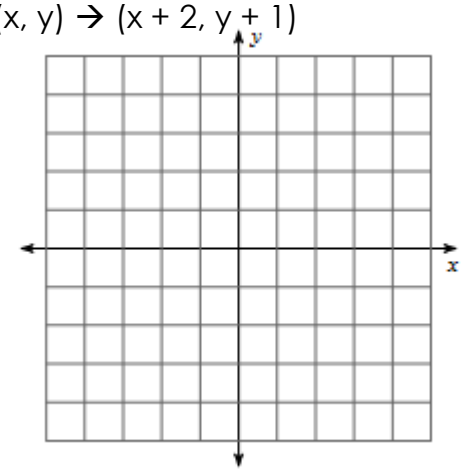
10. R(-3, 1), S(-2, 3), T(2, 3), U(3, 1);

. $\langle 0, -4 \rangle$



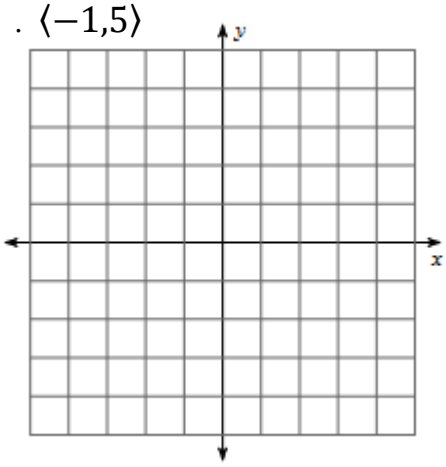
11. A(2, 1), B(-2, 0), C(3, -2);

(x, y) → (x + 2, y + 1)



12. A(-1, 0), B(3, -1), C(1, -2), D(0, -2);

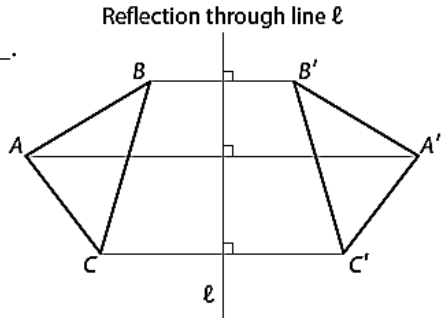
. $\langle -1, 5 \rangle$



Geometry
Reflections, Day 1

Name: _____
Date: _____

A _____ is a transformation where each point in a shape appears at an _____ distance on the opposite side of a given line, called the _____.

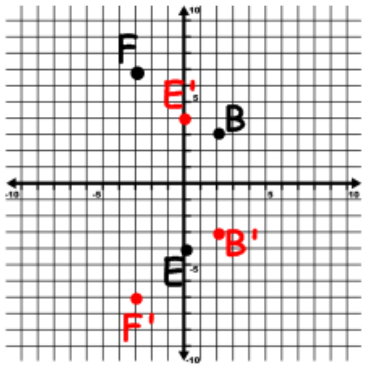


It preserves _____ so it is an _____.

Each point in the preimage will move _____ the distance from the line of reflection along a line that is _____ to the line of reflection.

X-AXIS REFLECTION

Pre-Image	Image
F: (–3, 7)	F':
E: (0, –4)	E':
B: (2, 3)	B':

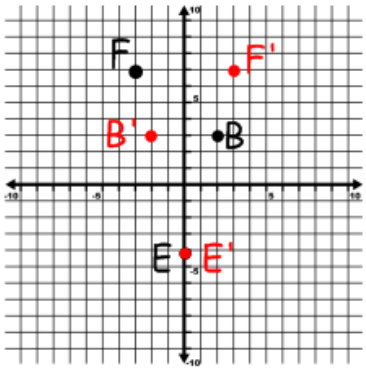


When reflecting across the x-axis what coordinate changes and how? _____

What coordinate stays the same? _____ So, (x, y) → _____.

Y-AXIS REFLECTION

Pre-Image	Image
F: (–3, 7)	F':
E: (0, –4)	E':
B: (2, 3)	B':



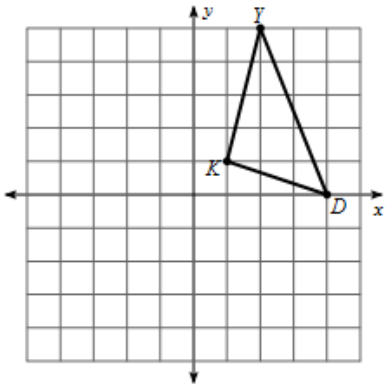
When reflecting across the y-axis what coordinate changes and how? _____

What coordinate stays the same? _____ So, (x, y) → _____.

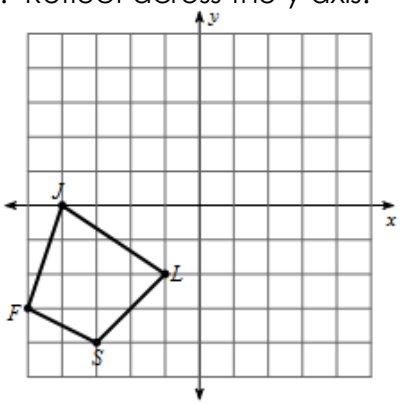
**Note: If E is on the line of reflection, then E and E' are the _____.

Let's Try! Reflect the given figure across the given axis.

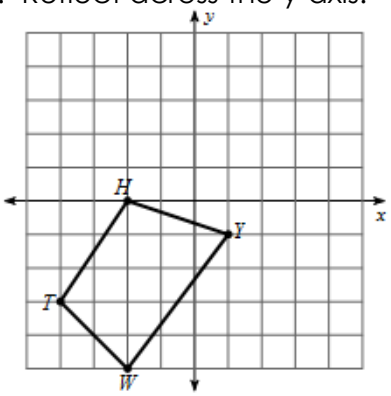
1. Reflect across the x-axis.



2. Reflect across the y-axis.

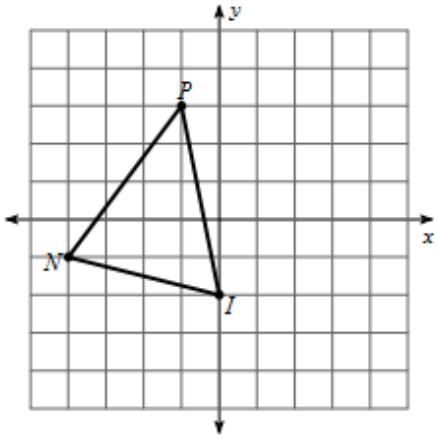


3. Reflect across the y-axis.

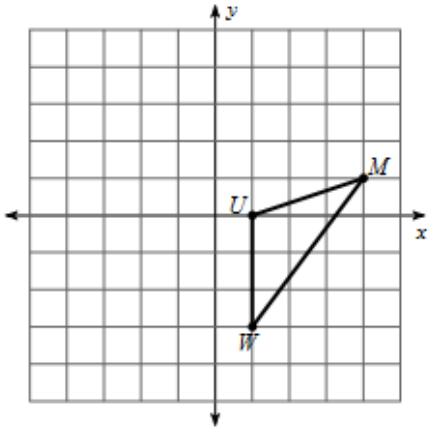


What if the line of reflection is not the x- or y-axis?

Ex 1. Reflection across x = –1



Ex 2. Reflection across y = 1



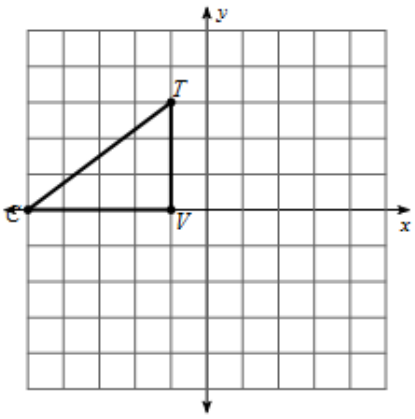
REMEMBER:

A horizontal line will have the equation y = #, while a vertical line will have the equation x = #.

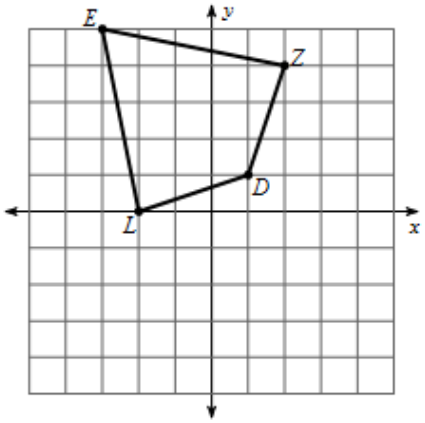
VUX HOY

Your Turn! Reflect the figure over the given line of reflection.

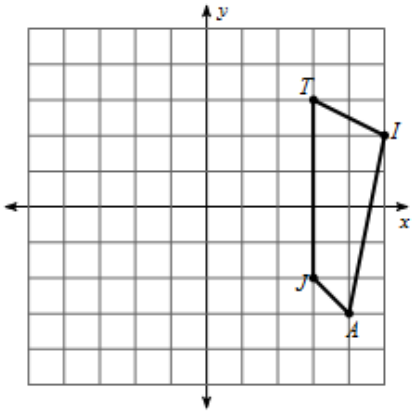
1. Reflect across x = 0



2. Reflect across y = 2



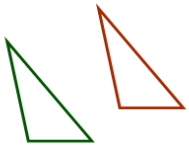
3. Reflect across x = 2

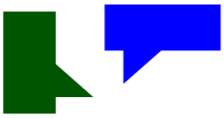


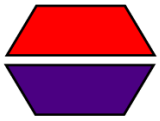
Geometry **Name:** _____
Classwork – Reflections, Day 1 **Date:** _____

Tell whether each transformation appears to be a reflection and explain.

1. 

2. 

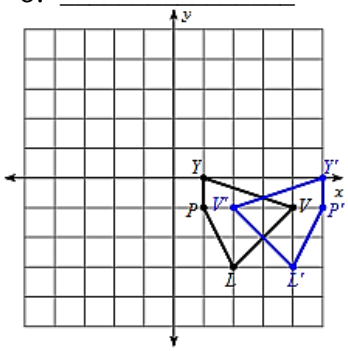
3. 

4. 

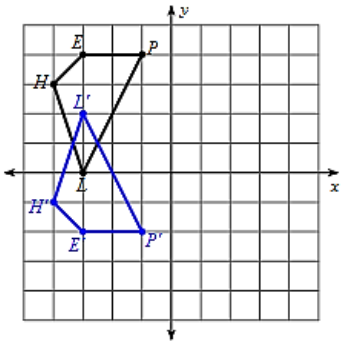
_____ _____ _____ _____

Write the line of reflection for the following graphs.

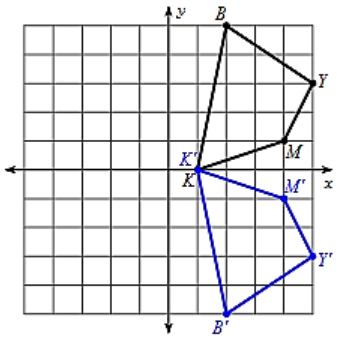
5. _____



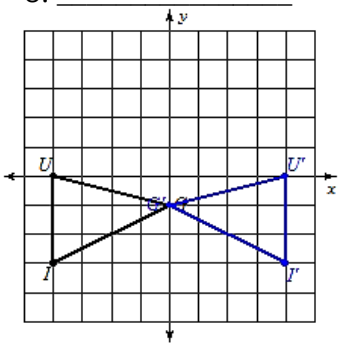
6. _____



7. _____

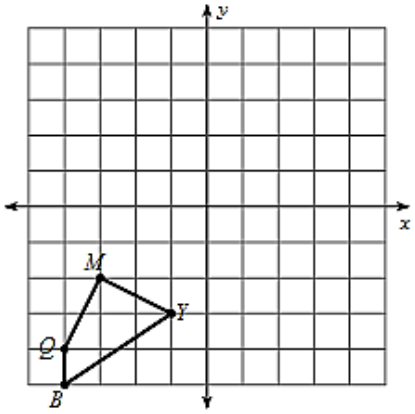


8. _____

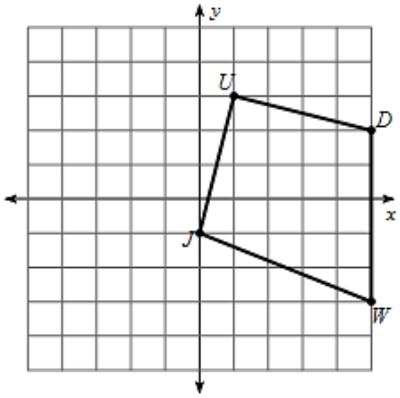


Reflect the given figure across the given axis.

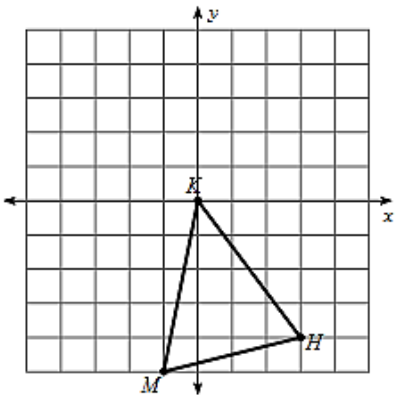
9. Reflect across the x-axis.



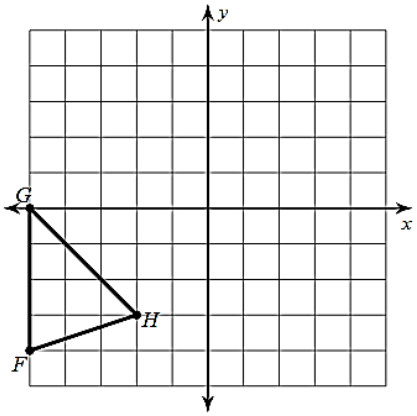
10. Reflect across the y-axis.



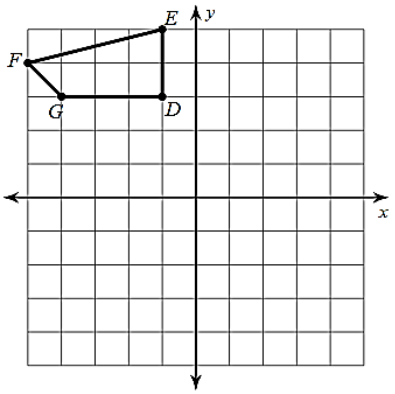
11. Reflect across y = -1.



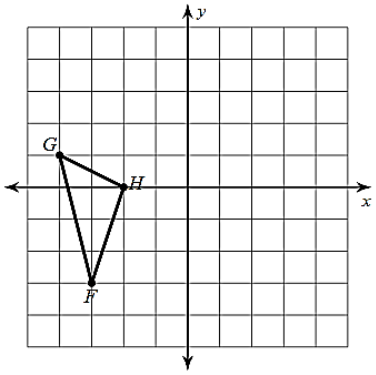
12. Reflect across x = -2.



13. Reflect across y = 2.



14. Reflect across the x-axis.

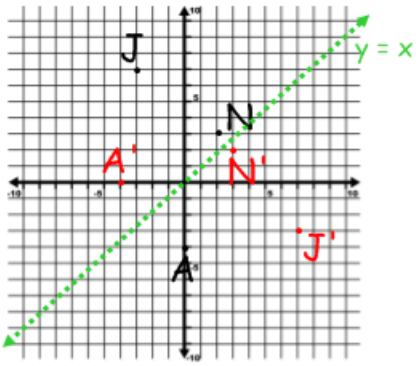


Geometry Name: _____

Reflections, Day 2 Date: _____

Line of Reflection: y = x

Pre-Image	Image
J (–3, 7)	J'
A (0, –4)	A'
N (2, 3)	N'

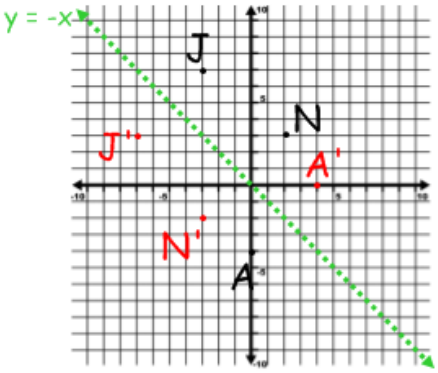


When reflecting a point in the line y = x, what happens to the coordinates? _____

So, (x, y) becomes _____.

Line of Reflection: y = -x

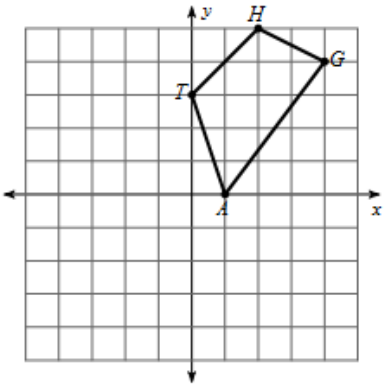
Pre-Image	Image
J (–3, 7)	J'
A (0, –4)	A'
N (2, 3)	N'



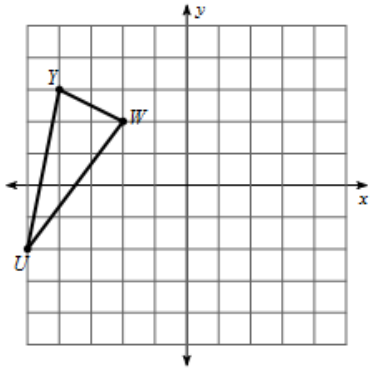
When reflecting a point in the line y = -x, what happens to the coordinates? _____

So, (x, y) becomes _____.

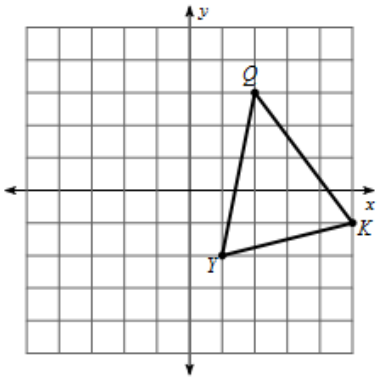
Ex. 1 Reflect over y = -x.



Ex. 2 Reflect over y = x.



Ex. 3 Reflect over y = x.

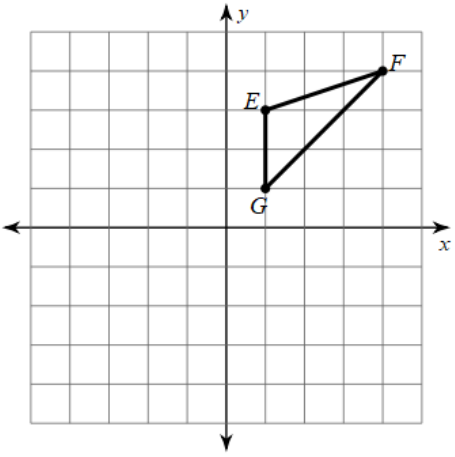


Geometry **Name:** _____

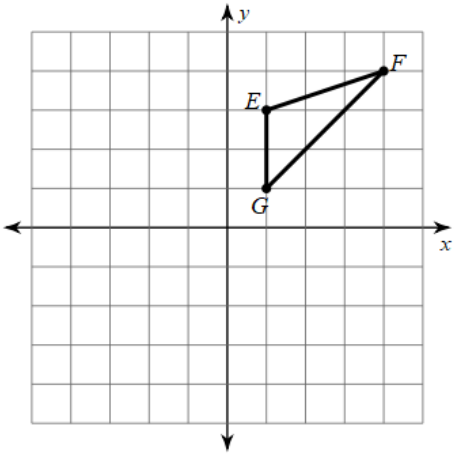
Classwork – ALL Reflections **Date:** _____

For #1 – 6, draw the triangle after each transformation and give the coordinates of A', B' and C'.

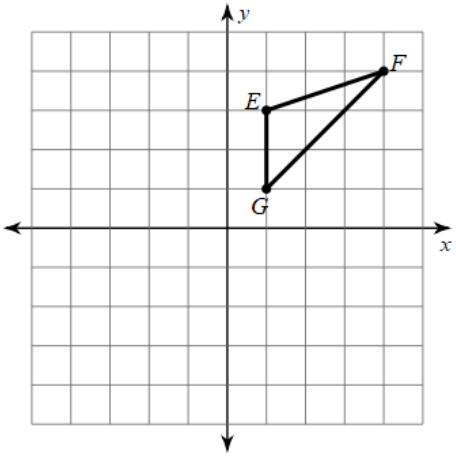
1. Reflect the triangle over the y-axis.



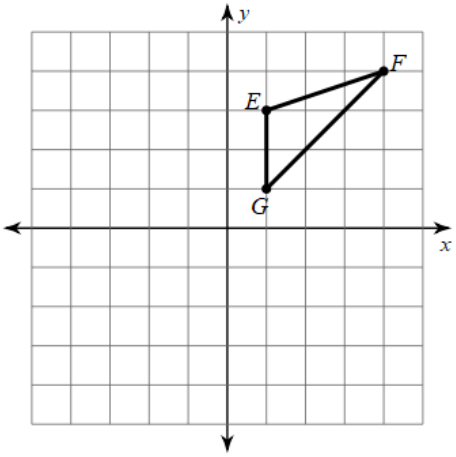
2. Reflect the triangle over the x-axis.



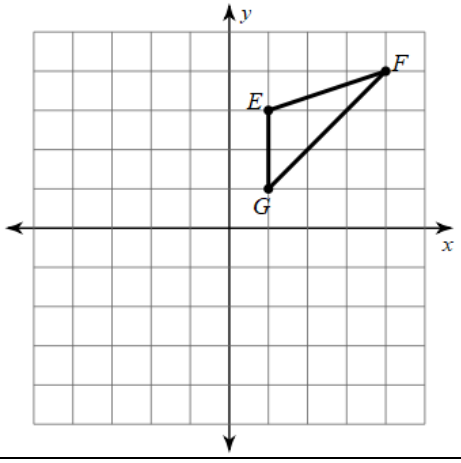
3. Reflect the triangle over $y = x$.



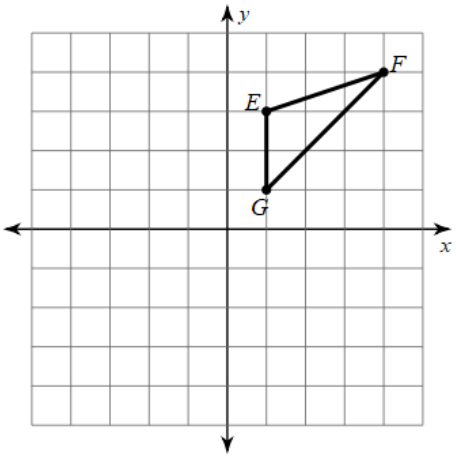
4. Reflect the triangle over $y = -x$.



5. Reflect the triangle over the x-axis and then over $y = x$.



6. Reflect the triangle over $x = -2$.



Complete.

7. After a reflection over the line $y = x$, (8, 11) is the image of point C. What is the original location of point C?

8. After a reflection over the y-axis, (0, 4) is the image of point L. What is the original location of point L?

9. The reflection of J(-1, 11) is J'(-1, -11). What is the reflection of D(5, -5) if the point is reflected across the same line?
What is the line of reflection?

10. The reflection of K(-2, 8) is K'(8, -2). What is the reflection of L(10, -3) if the point is reflected across the same line?
What is the line of reflection?

11. Given triangle JBN with coordinates J(4, 5), B(-1, -7), and N(-7, 8), find the image of point B after a reflection over the line $y = x$.

12. After a reflection over the x-axis, (5, 10) is the image of point N. What is the original location of point N?

13. Given triangle ONA with coordinates O(-4, 1), N(11, -12) and A(-7, -9), find the image of point O after a reflection over the x-axis.

14. Given triangle UCJ with coordinates U(-12, 7), C(4, 2), and J(-3, 9), find the image of point C after a reflection over the y-axis.

15. The reflection of H(-10, -11) is H'(10, -11). What is the reflection of N(8, 10), if the point is reflected across the same line?
What is the line of reflection?

Geometry
Rotations

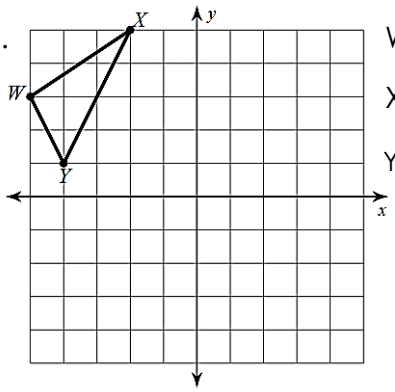
Name: _____
Date: _____

ROTATION: A _____ that turns a figure about a fixed point through a given angle and given direction. The amount of rotation is called the _____ of _____ and it is measured in degrees. Figures can be rotated _____ or _____. The rotations we are going to focus on are 90 degrees clockwise, 90 degrees counterclockwise, and 180 degrees around the origin.

ROTATIONS:

90 degrees clockwise: (x, y) → (y, -x)
90 degrees counterclockwise: (x, y) → (-y, x)
180 degree rotation: (x, y) → (-x, -y)

Let's Try! ROTATE 90 DEGREES CLOCKWISE about the origin! (270 degrees CCW)

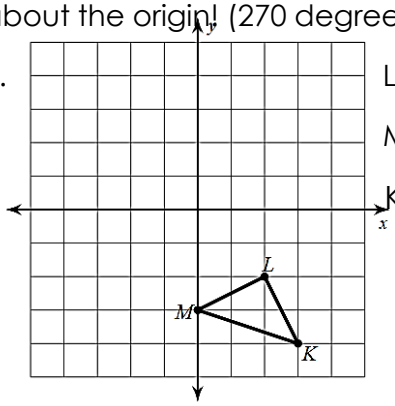
1. 

W(-5, 3)→W'(,)

X(-2, 5) →X'(,)

Y(-4, 1) → Y'(,)

ROTATE 90 DEGREES COUNTERCLOCKWISE about the origin! (270 degrees CW)

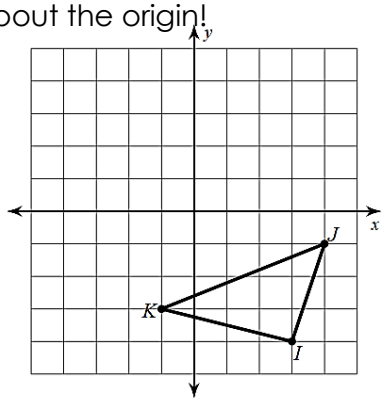
2. 

L(2, -2) → L'(,)

M(0, -3)→ M'(,)

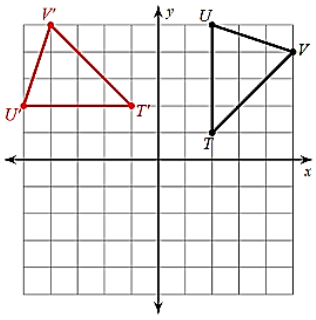
K(3, -4) →K'(,)

Let's Try! ROTATE 180 DEGREES about the origin!

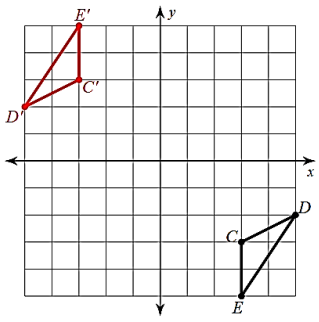
3. 

Write the degree and direction of the rotation below!

4. _____



5. _____



If the vertices of ΔABC are A(0, 5), B(-4, 2), and C(10, -6), find the vertices of ΔA'B'C' after each of the translations below.

a. (x, y) → (-y, x) A' = _____ B' = _____ C' = _____ Transformation: _____

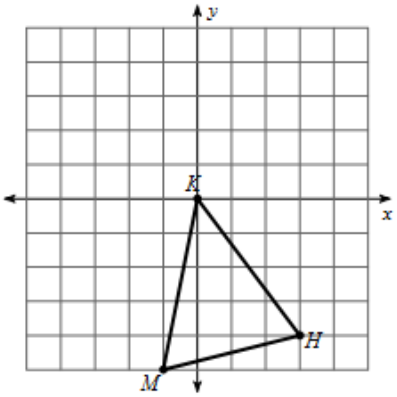
b. (x, y) → (y, -x) A' = _____ B' = _____ C' = _____ Transformation: _____

c. (x, y) → (-x, -y) A' = _____ B' = _____ C' = _____ Transformation: _____

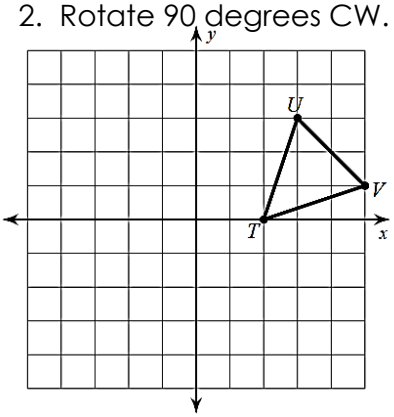
Geometry
Classwork – Rotations

Name: _____
Date: _____

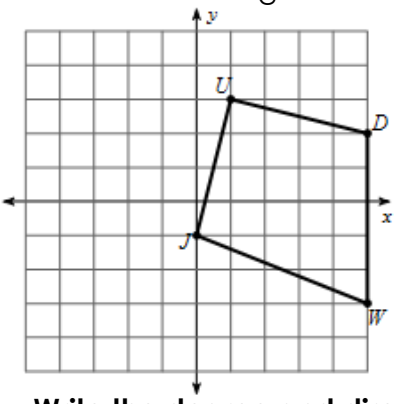
1. Rotate 180 degrees.



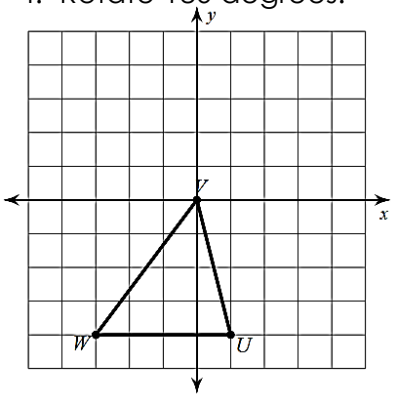
2. Rotate 90 degrees CW.



3. Rotate 90 degrees CCW.

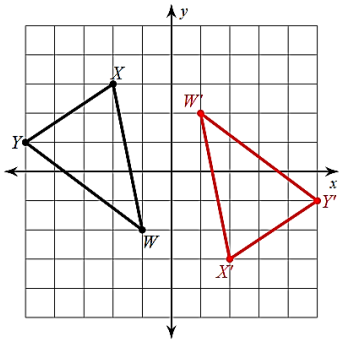


4. Rotate 180 degrees.

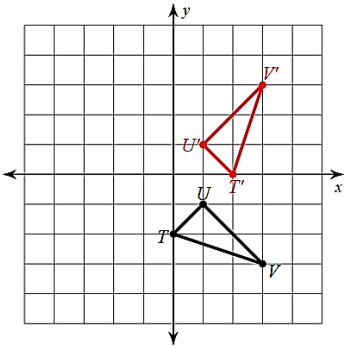


Write the degree and direction of the rotation shown below!

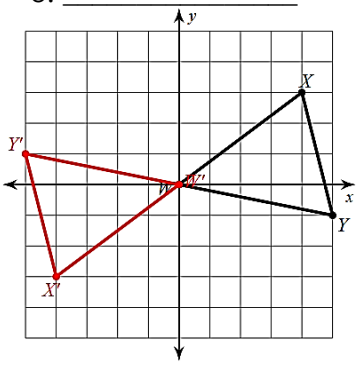
1. _____



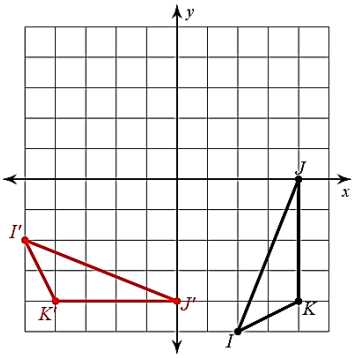
2. _____



3. _____

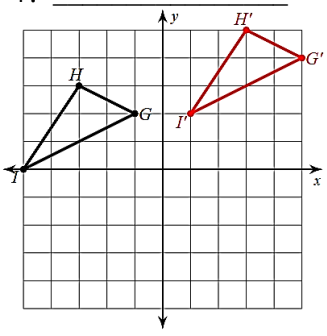


4. _____

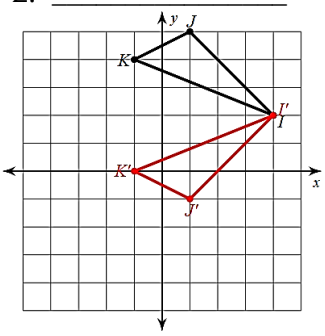


EVERYTHING! Write the translation vector, line of reflection, or direction and degree of rotation!

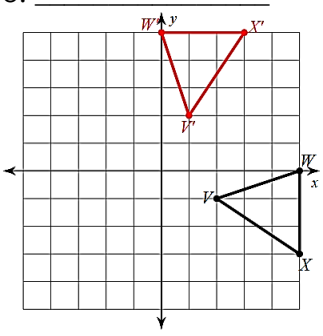
1. _____



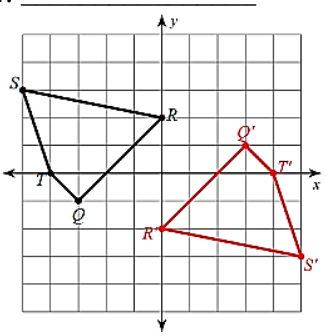
2. _____



3. _____



4. _____



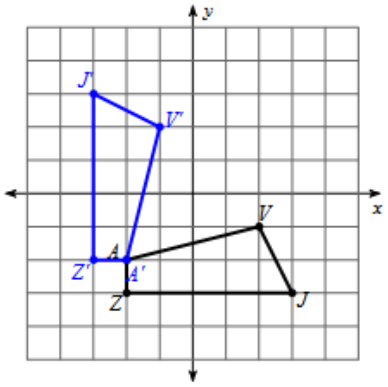
Geometry – Review for Quiz Name_____
Introduction to Geometry and Transformations

1. Use the translation (x, y) → (x – 4, y + 8) for questions a – d.

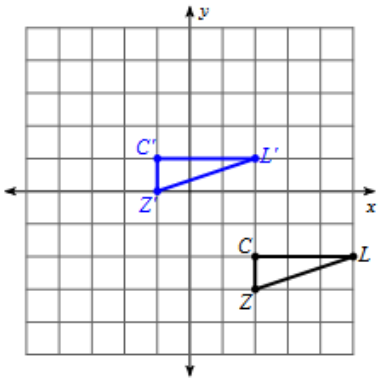
a. What is the translation vector? _____
b. What is the image of A (-5, -4)? _____
c. What is the image of A'' (use part b)? _____
d. What is the pre-image of B' (14, 8)? _____

Write the <u>translation vector</u>, <u>line of reflection,</u> or <u>degree & direction of rotation</u> for the following graphs.

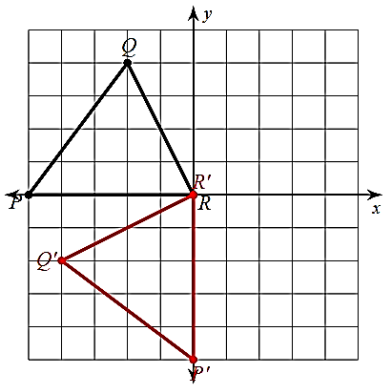
2. _____



3. _____



4. _____



5. Write your rules for the following transformations:

a. Translation right h units and down k units: (x, y) → _____
b. Reflection over the x-axis: (x, y) → _____
c. Reflection over the y-axis: (x, y) → _____
d. Reflection over the line y = x: (x, y) → _____
e. Reflection over the line y = -x: (x, y) → _____
f. Rotation 90 degrees CW: (x, y) → _____
g. Rotation 90 degrees CCW: (x, y) → _____
h. Rotation 180 degrees: (x, y) → _____

6. The vertices of ΔABC are A(2, -4), B(0, 6), and C(-5, 3). Find the vertices of ΔA'B'C' given the transformation rules below. These describe the transformation that occurred.

a. (x, y) → (x – 8, y – 3) A' = _____ , B' = _____ , C' = _____
Transformation: _____
b. (x, y) → (x, -y) A' = _____ , B' = _____ , C' = _____
Transformation: _____
c. (x, y) → (-y, -x) A' = _____ , B' = _____ , C' = _____
Transformation: _____

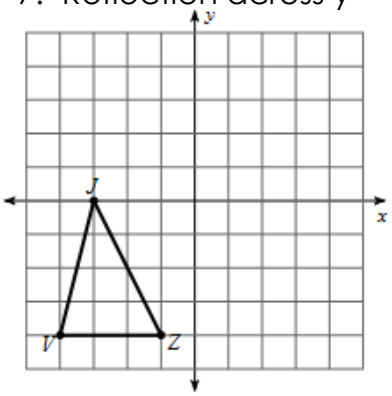
d. (x, y) → (y, x) A' = _____ , B' = _____ , C' = _____
Transformation: _____

e. (x, y) → (-x, y) A' = _____ , B' = _____ , C' = _____
Transformation: _____

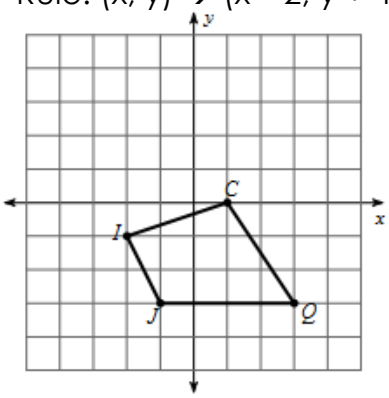
f. (x, y) → (y, -x) A' = _____ , B' = _____ , C' = _____
Transformation: _____

Follow the instructions for each graph.

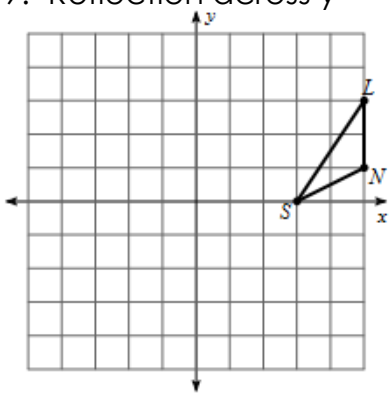
7. Reflection across y = -x.



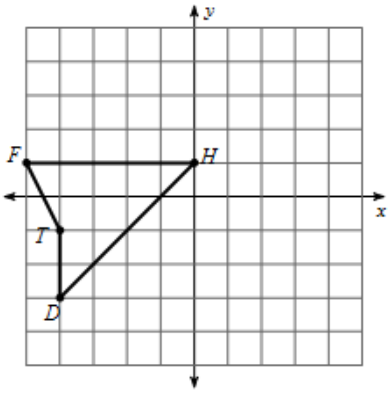
8. Rule: (x, y) → (x – 2, y + 4)



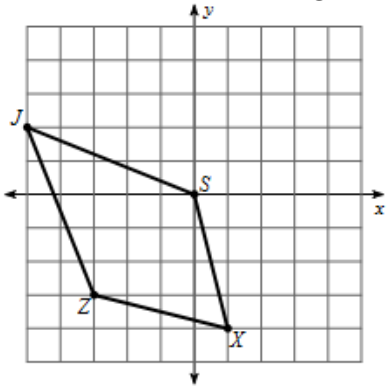
9. Reflection across y = -1.



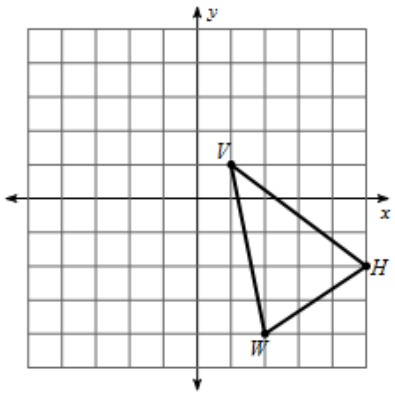
10. Reflection across x = -2.



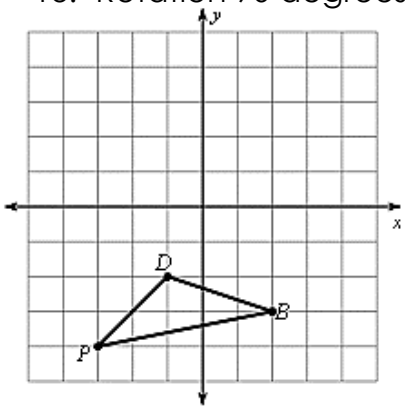
11. Rotation 180 degrees



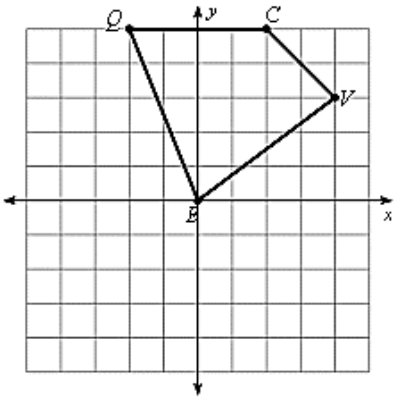
12. Rule: (x, y) → (y, x)



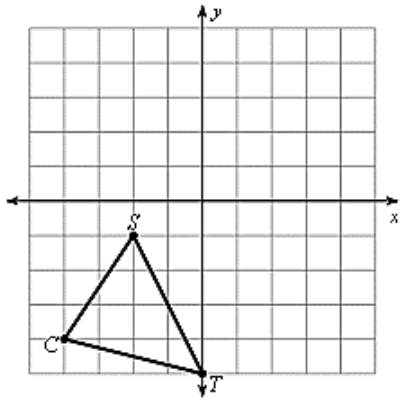
13. Rotation 90 degrees CW



14. ⟨–2,–3⟩



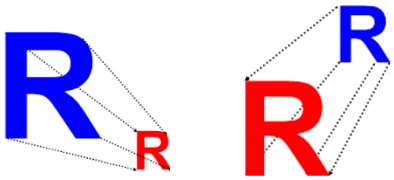
15. Rule: (x, y) → (-x, y)

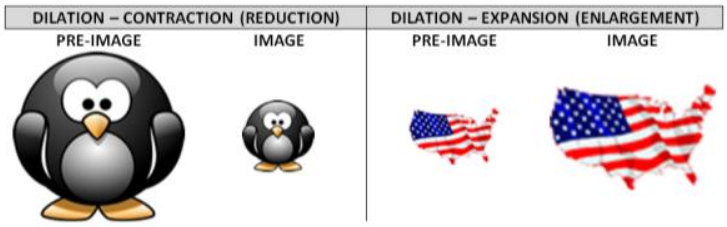


Geometry
Dilations

Name: _____
Date: _____

Dilation: A transformation that _____ or _____ the size of an object.





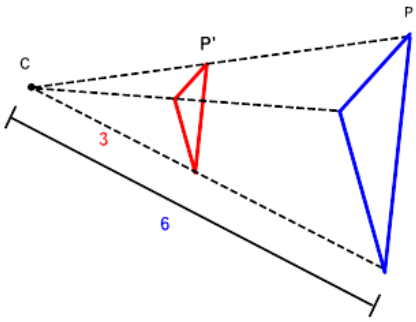
Scale Factor

-The preimage is enlarge or reduced by a _____ (k)

K =

-The scale factor is determined by the distance from the _____ (C)

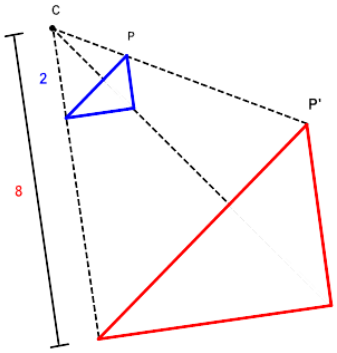
Reduction: _____



K = _____

Reduction or Enlargement

Enlargement: _____



K = _____

Reduction or Enlargement

Notation

C is the _____

K is the value of the _____

Dilation Properties

Dilation is NOT an isometric transformation so its properties differ from the ones we saw with reflection, rotation and translation. The following properties are preserved between the pre-image and its image when dilating:

_____ - Angles stay the same.

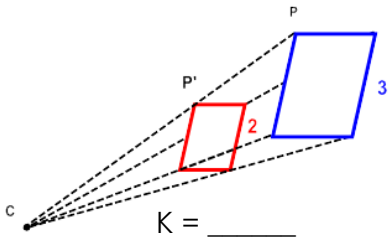
_____ - Things that were parallel are still parallel.

_____ - Points on a line remain on the line.

_____ IS NOT PRESERVED!!!

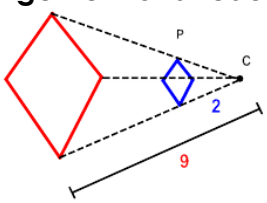
After a dilation, the pre-image and image have the _____ but not the _____.

Find the scale factor and determine if the dilation is an enlargement or a reduction.



K = _____

Reduction or Enlargement



K = _____

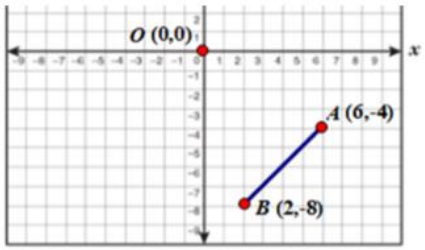
Reduction or Enlargement

Dilations of points and segments in the Coordinate Plane when the Origin is the Center

For a dilation to maintain its proportionality of sides, the two variables must be multiplied by a constant value, k, which is the scale factor.

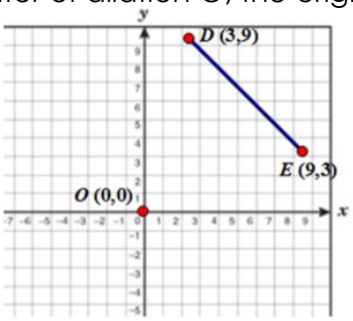
$D_{O,k}(x, y) = (kx, ky)$

1. A dilation of 1/2 with center of dilation O, the origin.



Preimage	Image
A (6, -4)	_____
B (2, -8)	_____

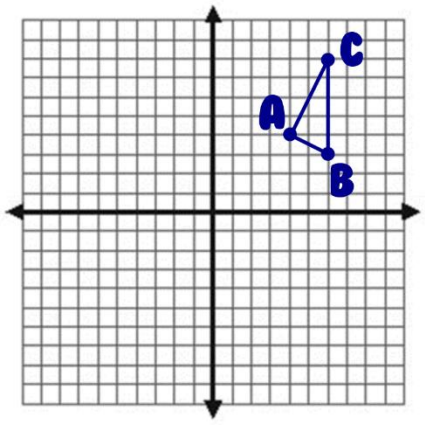
2. A dilation of 1/3 with center of dilation O, the origin.



Preimage	Image
D (3, 9)	_____
E (9, 3)	_____

Dilations of polygons in the Coordinate Plane when the Origin is the Center

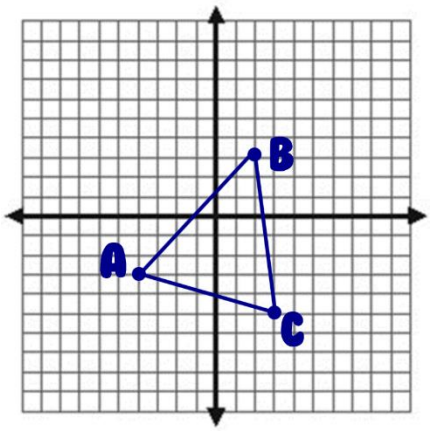
3.



Dilation Notation: $D_{0,1/2}$ (x, y) → (1/2x, 1/2y)

Preimage	Image
A(4, 4)	A'(__, __)
B(6, 3)	B'(__, __)
C(6, 8)	C'(__, __)

4.



Dilation Notation: $D_{0,2}$ (x, y) → (2x, 2y)

Preimage	Image
A(-4, -3)	A'(__, __)
B(2, 3)	B'(__, __)
C(3, -5)	C'(__, __)

Geometry **Name:** _____
Classwork – Dilations **Date:** _____

Find the coordinates of the vertices of each figure after it has been dilated by the given scale factor about the origin.

1. dilation of 0.5

D(3, -4), V(2, 1), C(4, -1)

2. dilation of 5

K(0, 1), J(1, 1), I(1, -1)

Describe the dilation about the origin.

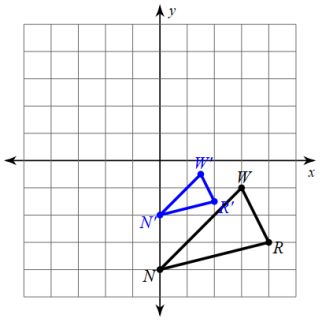
3. X(-1, 0), G(0, 1), W(1, -1)

to X'(-4, 0), G'(0, 4), W'(4, -4)

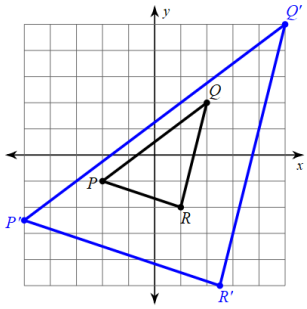
4. P(-5, 1), Q(-5, 2), R(-3, 3), S(-4, 1)

to P'(-2.5, 0.5), Q'(-2.5, 1), R'(-1.5, 1.5), S'(-2, 0.5)

5.

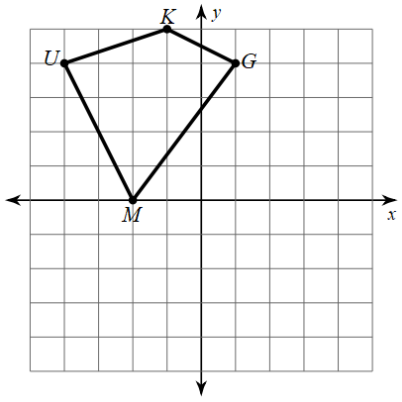


6.

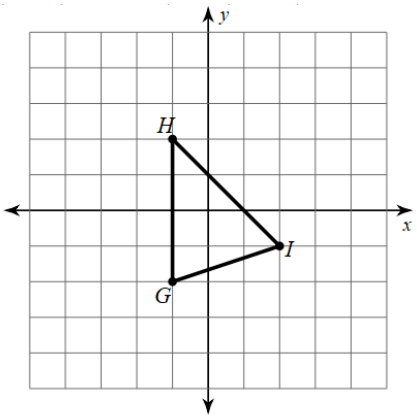


Find the vertices after the given dilation about the origin and graph.

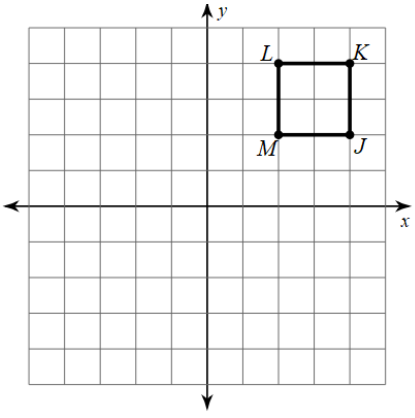
7. dilation of 0.5



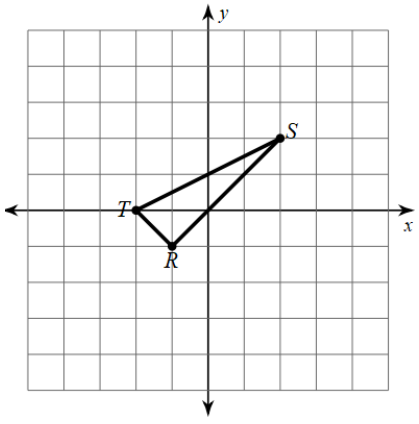
8. dilation of 2



9. dilation of ½



10. dilation of 2



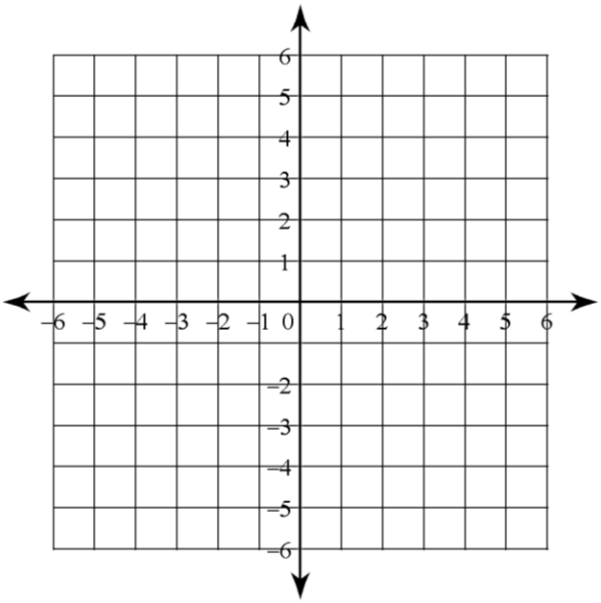
Geometry – DAY 1.10 **Name:** _____
Multiple Transformations **Date:** _____

You should already know how to do the following:

- Translations (slides)
- Reflections (flips, like with a mirror)
- Rotations (spins or turns)
- Dilations (stretches or shrinks)

Now you are going to try some multiple transformations: ORDER MATTERS! So do the first transformation written and then the next one.

1. Translate ΔALT if A(-5,-1), L(-3,-2), T(-3,2) by moving it right 6 and down 3, then reflect the image over the y-axis.



A'(_____ ,_____)

L'(_____ , _____)

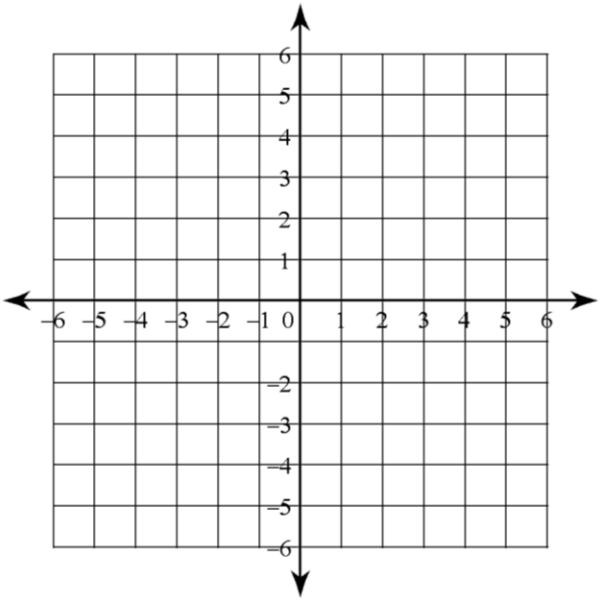
T'(_____ , _____)

A"(_____, _____)

L"(_____,_____)

T"(_____,_____)

2. Rotate ΔALT if A(-5,-1), L(-3,-2), T(-3,2) 90^o clockwise around the origin, then reflect the image over the x-axis.



A'(_____,_____)

L'(_____,_____)

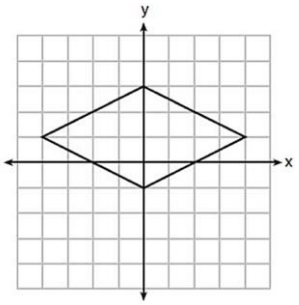
T'(_____,_____)

A"(_____,_____)

L"(_____,_____)

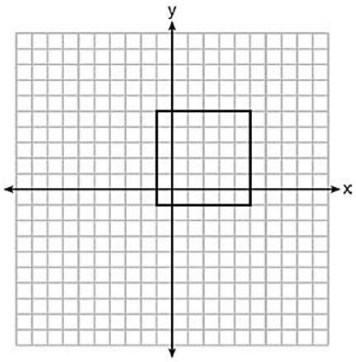
T"(_____,_____)

Mapping a Figure Onto Itself



1. Which transformation would carry the rhombus onto itself?

A. 180 degree rotation about the origin
B. Reflection over the x-axis
C. Reflection over the y-axis
D. 90 degree clockwise rotation about the origin



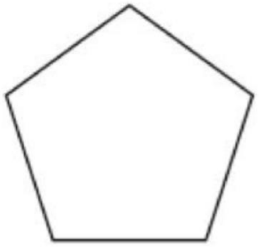
2. In the coordinate plane to the right, a square is graphed.
A reflection over which line does *NOT* carry the square onto itself?

A. x = 5
B. y = 2
C. y = x
D. x + y = 4

3. Which figure always has exactly four lines of reflection that map the figure onto itself?

A. Square
B. Rectangle
C. Octagon
D. Triangle

4. The regular polygon is rotated about its center. Which angle of rotation will carry the figure onto itself?



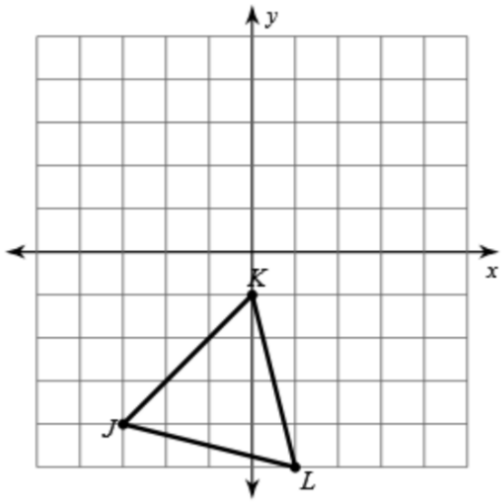
A. 60 degrees
B. 72 degrees
C. 108 degrees
D. 216 degrees

5. Which transformation would *not* carry a square onto itself?

A. a reflection over one of its diagonals
B. a 90 degree rotation clockwise about its center
C. a 180 degree rotation about its center
D. a translation 5 units to the right

Geometry DAY 1.10 **Name:** _____
Classwork – Composition of Transformations **Date:** _____

Graph the following compound transformations.

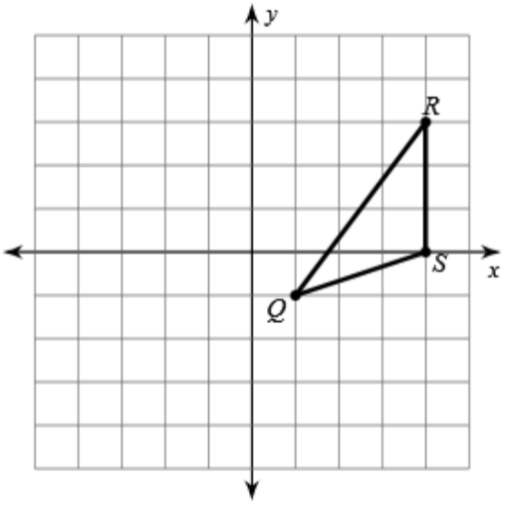


1. a. Translation $\langle 4,0 \rangle$

K'(,) L'(,) J'(,)

b. Reflection over the x-axis

K"(,) L"(,) J"(,)



2. a. Rotate 90 degrees CCW

Q'(,) R'(,) S'(,)

b. Reflection over the line y = 1

Q"(,) R"(,) S"(,)

Using the pre-image point (5, -8), follow the transformations below. Start back at the pre-image for each number. Use your rules!!!

3. Reflection over the x-axis: (,)

4. Translation vector $\langle -4,-12 \rangle$: (,)

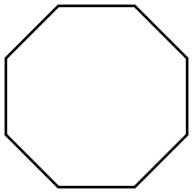
5. Dilation with a scale factor of ½: (,)

6. Rotation of 90 degrees CCW: (,)

7. Translation of $\langle 3,-1 \rangle$ → then Reflection over the y-axis: (,)

8. Rotation of 180 degrees → then Dilation of 3: (,)

9. What is the smallest angle of rotation to

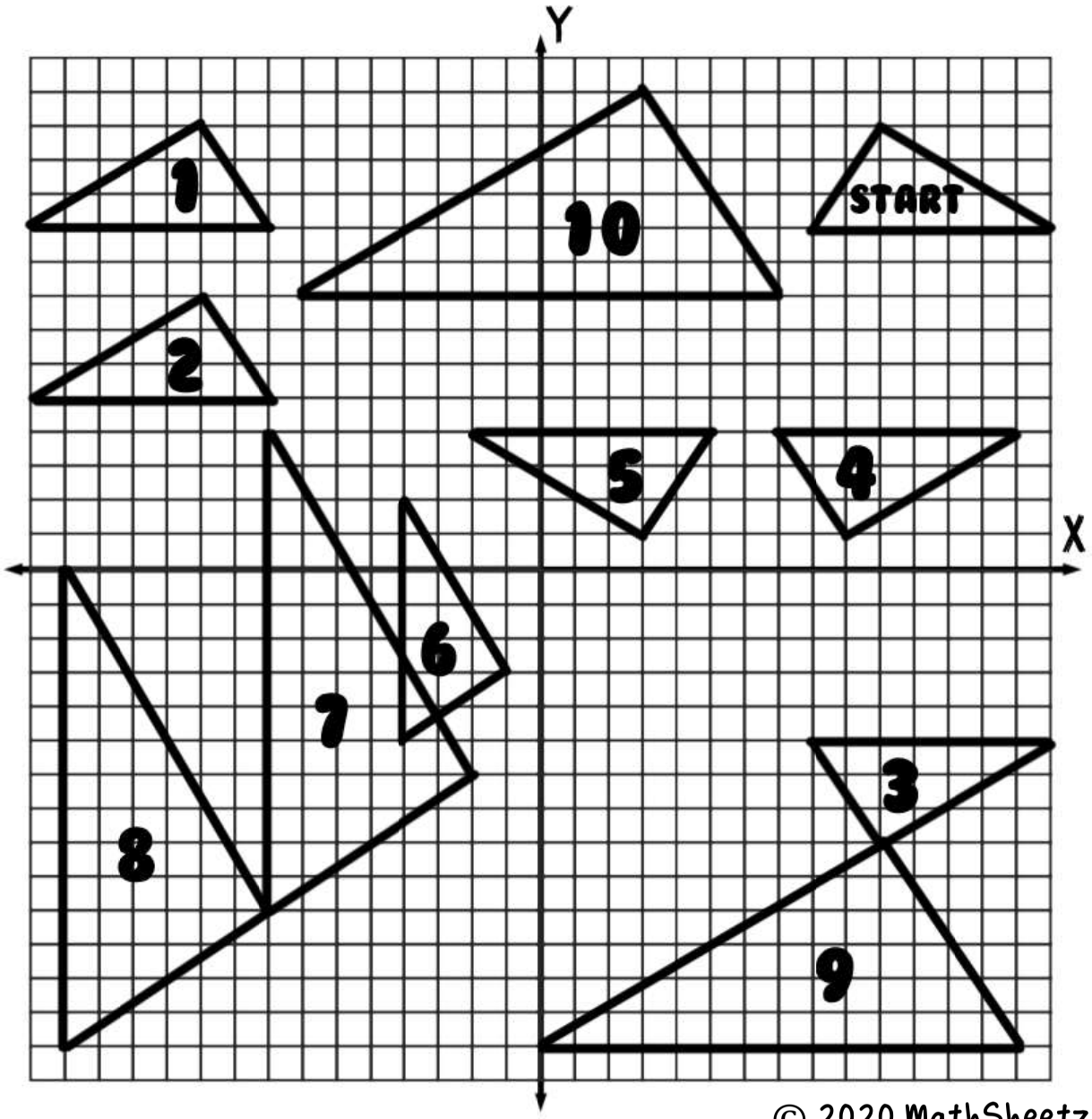


TRANSFORMATIONS

Name: _____ Period: _____ Date: _____

Describe the transformation that takes the "start" triangle to triangle #1. In numerical order, continue describing the transformations that take the previous triangle to the next triangle. **BE SPECIFIC!**

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____



Geometry **Name:** _____
TEST REVIEW – Transformations **Date:** _____ **Period:** _____

1. Use the translation (x, y) → (x + 1, y - 7) for questions a – d.

a. What is the translation vector? _____

b. What is the image of A (10, -4)? _____

c. What is the image of A' from part b (which would be called A")? _____

d. What is the pre-image of C' (-9, 12)? _____

2. What is an isometry? _____

3. The vertices of ΔABC are A(-1. 0), B(5, 3), and C(2, -4). Find the vertices of ΔA'B'C' given the transformation rules below. Then describe the transformation that occurred.

a. (x, y) → (x + 11, y – 5) A' = _____ , B' = _____ , C' = _____

Transformation: _____

b. (x, y) → (-x, -y) A' = _____ , B' = _____ , C' = _____

Transformation: _____

c. (x, y) → (y, -x) A' = _____ , B' = _____ , C' = _____

Transformation: _____

d. (x, y) → (4x, 4y) A' = _____ , B' = _____ , C' = _____

Transformation: _____

e. (x, y) → (y, x) A' = _____ , B' = _____ , C' = _____

Transformation: _____

f. (x, y) → (-y, x) A' = _____ , B' = _____ , C' = _____

Transformation: _____

4. Answer the following questions.

a. After a reflection over the line $y = x$, (-2, 16) is the image of point C. What is the original location of point C?

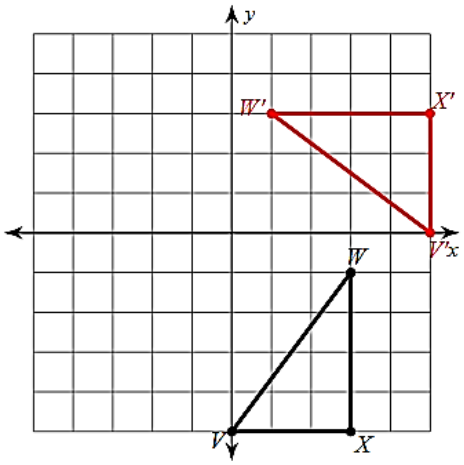
b. After a reflection over the x-axis, (8, 0) is the image of point M. What is the original location of point M?

c. Given triangle FUN with coordinates F(-4, 1), U(11, -12) and N(-7, -9), find the image of point N after a rotation of 90 degrees counterclockwise.

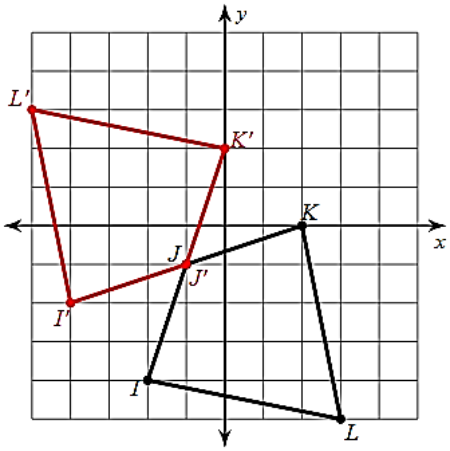
d. After a dilation with a scale factor of ½, (5, -4) is the **image** of point N. What is the original location of point N?

5. Write the transformation rule for the following graphs.

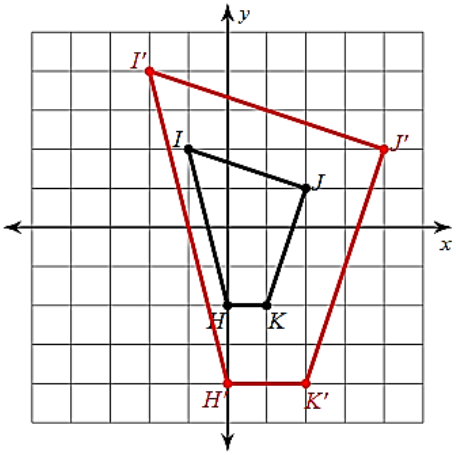
a. _____



b. _____

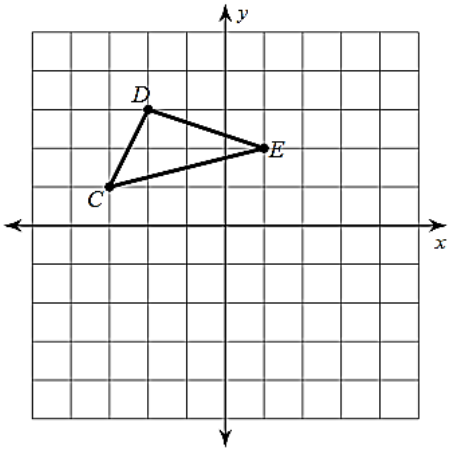


c. _____

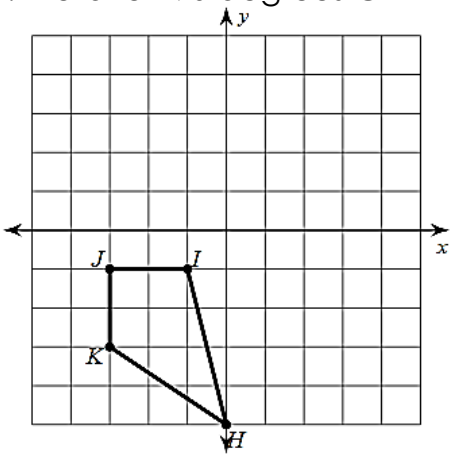


Follow the instructions for each graph.

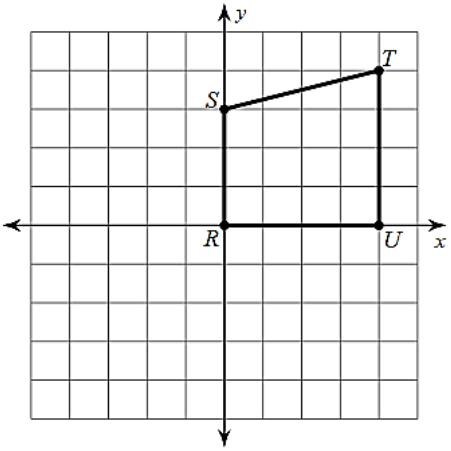
6. Reflection over x = 1



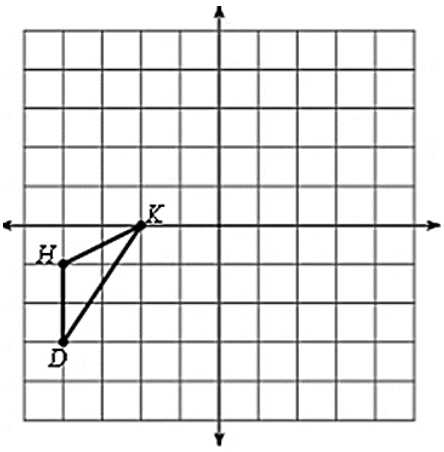
7. Rotation 90 degrees CW



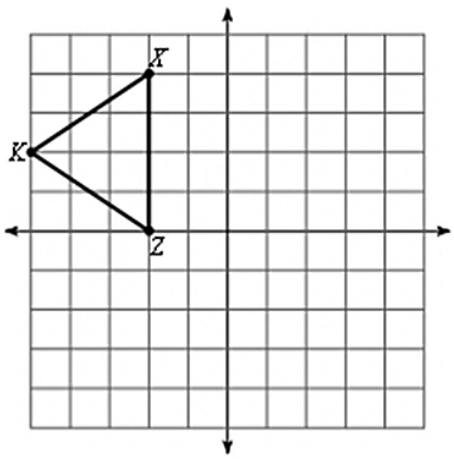
8. Reflection over y = -x



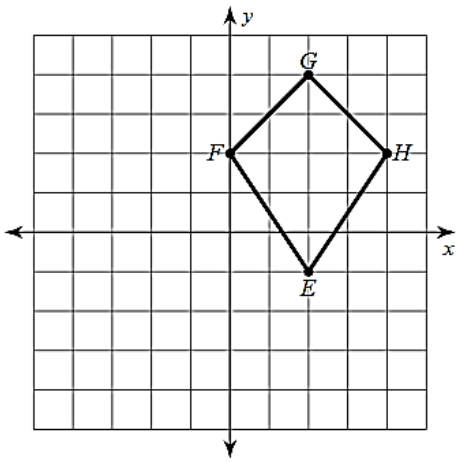
9. <2, 3>



10. (x, y) → (x, y – 4)



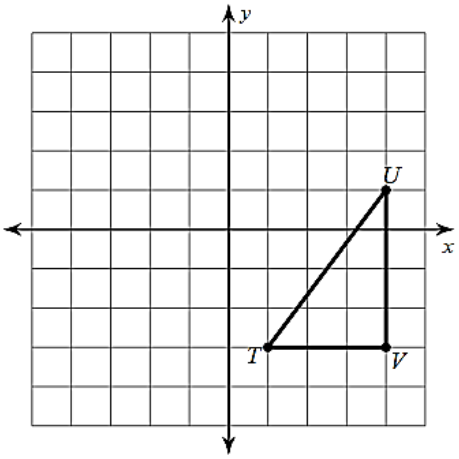
11. (x, y) → (0.5x, 0.5y)



Composition of Transformations

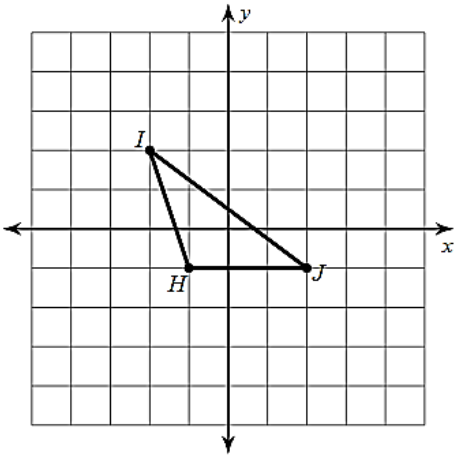
(Label the first transformation with ΔA'B'C'. After the second transformation, label it with ΔA"B"C".)

12. a. rotation 180 degrees
    b. reflection over y = -1



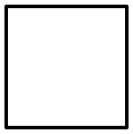
V' _____ V" _____
U' _____ U" _____
T' _____ T" _____

13. a. dilation of 2
    b. <1, -2>



H' _____ H" _____
I' _____ I" _____
J' _____ J" _____

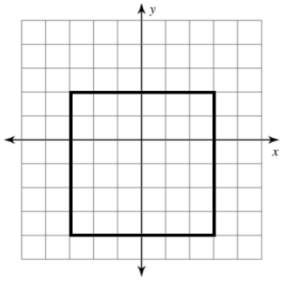
14. How many lines of reflection does a square have that maps it onto itself?



A. 2 B. 3 C. 4 D. 6

15. Which of the following transformations does *NOT* map the square onto itself?

A. Reflection over the y-axis
B. Reflection over the line y = -1
C. Rotation 45 degrees about the origin
D. All of the above



GOOD LUCK STUDYING!!!! Don't forget to study your notes, your quiz, and this test review!!!