Good morning!

- Park your phones
- Take out your notecard
- Take out HW & stamp sheet

Bring colored pencils to class tomorrow.

Bulldog Best Name________________________________ ID: 1

Unit 2 Date_______________ Period____

Solve each equation. Remember to check for extraneous solutions.

1) $\left(\sqrt{x+3}\right)^2 = \left(\sqrt{3x+1}\right)^2$

$x+3 = 3x+1$

$x = 1$

2) $\sqrt{v+3} = \sqrt{-1-v}$

3) $\sqrt{14-2x} = x-7$

calc.

$y_1 = \sqrt{14-2x}$

$y_2 = x-7$

$x=7$

4) $\sqrt{10-n} = n-8$

5) $-2 = -n + \sqrt{4n-12}$

6) $\sqrt{13-2x} - x = -5$

Calc!

7) $\sqrt{-4-4m} - \sqrt{-4-m} = 3$

8) $\sqrt{-1-x} = 2 - \sqrt{2-2x}$

Solve each equation.

9) $\frac{33}{8} = (x+8)^{-\frac{1}{2}} + 4$

10) $-2b^{\frac{7}{6}} + 9 = -247$

11) $4 = (-5-b)^{\frac{2}{3}}$

12) $22 = (p+22)^{\frac{2}{3}} - 3$

Combinations Notes Name:____________________ Date: 9/28/17

Warm up

1. The distance a person can see to the horizon can be found using the function $d(h) = \sqrt{\frac{3h}{2}}$, where $d(h)$ represents the distance in miles and h represents the height the person is above sea level. Create a table and graph to represent this function. Use a table, graph, and the equation to find the domain and range, intercepts, end behavior and intervals where the function is increasing and/or decreasing.

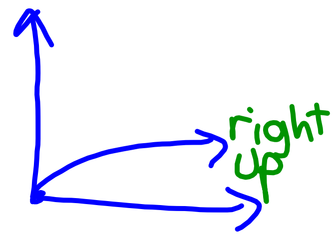
Domain: $[0, \infty)$

Range: $[0, \infty)$

Intercepts (y and x): x-int is 0, y-int is 0

End Behavior: $x \to \infty$, $y \to \infty$

Inc/Dec Intervals: $(0, \infty)$



Combinations of Transformations.

When two or more transformations are combined to form a new transformation, the result is called a composition of transformations, or a sequence of transformations.

1. A plane figure is translated 3 units right and 2 units down. The translated figure is then dilated with a scale factor of 4, centered at the origin. Write a rule to describe the transformations.

1.

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

2

$4(x+3, y-2)$

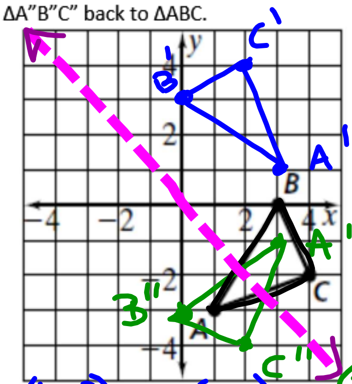
$(4x+12, 4y-8)$

$(x, y) \to (4x+12, 4y-8)$

Combinations Notes Name:________________________________ Date: ________________

1.

Rotate ΔABC 90° *counterclockwise*. Then reflect it over the x-axis. What additional transformation will be needed to map ΔA"B"C" back to ΔABC.



A (1,-3) → A' (3,1) → A" (3,-1) → A (1,-3)

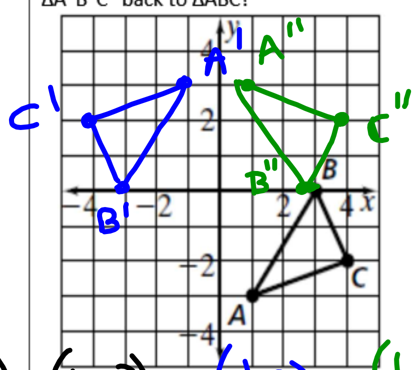
B (3,0) → B' (0,3) → B" (0,-3) → B (3,0)

C (4,-2) → C' (2,4) → C" (2,-4) → C (4,-2)

TRANSFORMATION: Reflect y=-x

2.

Rotate ΔABC 180° *counterclockwise*. Then reflect it over the y-axis. What additional transformation will be needed to map ΔA"B"C" back to ΔABC?



A (1,-3) → A' (-1,3) → A" (1,3) → A______

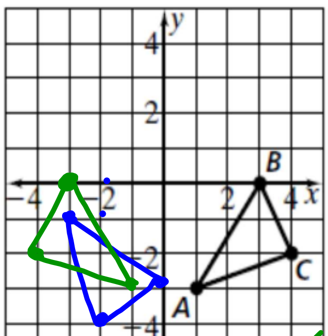
B (3,0) → B' (-3,0) → B" (3,0) → B______

C (4,-2) → C' (-4,2) → C" (4,2) → C______

TRANSFORMATION: Reflect x-axis

3.

Rotate ΔABC 270° *counterclockwise*. Then reflect it over the $y = x$. What additional transformation will be needed to map ΔA"B"C" back to ΔABC.



A (1,-3) → A' (-3,-1) → A" (-1,-3) → A______

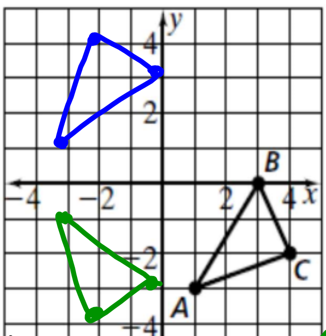
B (3,0) → B' (0,-3) → B" (-3,0) → B______

C (4,-2) → C' (-2,-4) → C" (-4,-2) → C______

TRANSFORMATION: Reflect y-axis

4.

Reflect ΔABC *over* $y = x$. Then reflect it over the x-axis. What additional transformation will be needed to map ΔA"B"C" back to ΔABC.



A (1,-3) → A' (-3,1) → A" (-3,-1) → A______

B (3,0) → B' (0,3) → B" (0,-3) → B______

C (4,-2) → C' (-2,4) → C" (-2,-4) → C______

TRANSFORMATION: Rotate CCW 90°

Combinations Notes Name: pre-image Date:

Domain and Range for Transformations

Domain: inputs (original coordinates) ↑ vertices

Range: outputs (image coordinates)

Example 1: If the domain of a function that is reflected over the x-axis is (3,4), (2,-1), (-1,2), what is the range?

$(x,y) \to (x,-y)$ D: {(3,4), (2,-1), (-1,2)}

R: {(3,-4), (2,1), (-1,-2)}

Example 2: If the domain of the coordinate transformation $f(x, y) = (y + 1, -x - 4)$ is (1,4), (−3,2), (−1,−1), what is the range?

$f(x,y) = (y+1, -x-4)$ R: {(5,-5), (3,-1), (0,-3)}

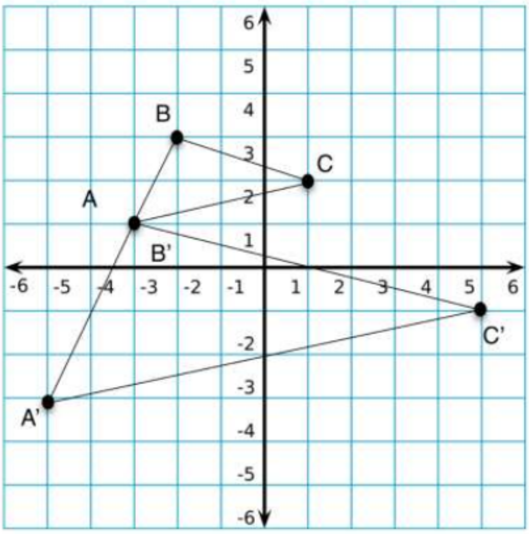
Example 3: If the range of the coordinate transformation $f(x, y) = (-2x, -3y + 1)$ is (10,−2), (8,−5), (−2,4), what is the domain?

$\frac{-2x}{-2} = \frac{10}{-2}$ $-3y+1=-2$

$x=-5$ $y = 1$

D: {(-5,1), (-4,2), (1,-1)}

Example 4: Using the graph below, if this transformation was written as a function, identify the domain and range



Dilation

pre image

D: {(-3,1), (-2,3), (1,2)}

R: {(-5,-3), (-3,1), (5,-1)}

image

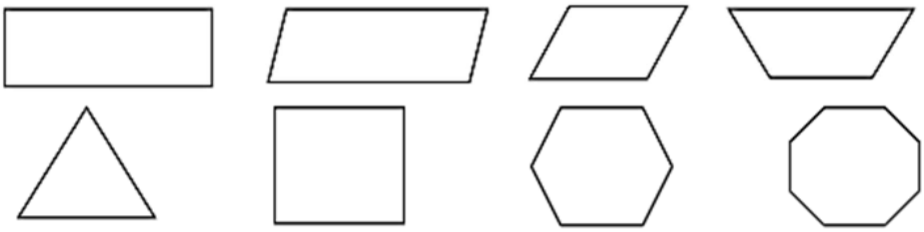
$-3k = -5$

$k = \frac{5}{3}$

$1 \cdot \frac{5}{3} \neq -3$

Combinations Notes Name:_________________________________ Date: ________________

Example: For each of the following figures, describe and illustrate the rotations and/or reflections that carry the figure onto itself.

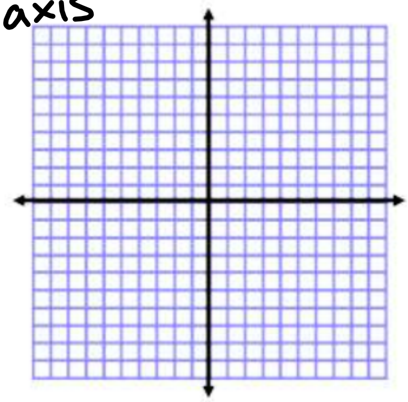


Combinations Practice Name: ______________________ Date: 9/28/17

Determine the transformation for each.

yes

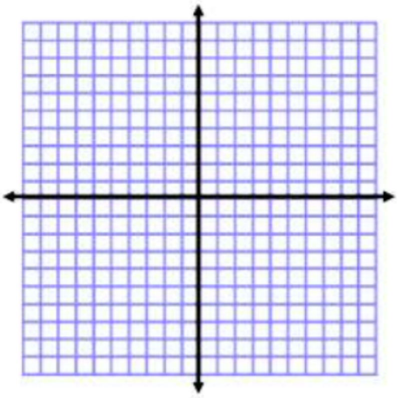
1. $\overset{x,y}{(4,2)} \rightarrow (-4,2)$ $(-x, y)$ reflect y-axis
2. $(4,2) \rightarrow (-2,-4)$
3. $(4,2) \rightarrow (4,-2)$
4. $(4,2) \rightarrow (2,4)$
5. $(4,2) \rightarrow (2,-4)$
6. $(4,2) \rightarrow (-2,4)$
7. $(4,2) \rightarrow (-4,-2)$

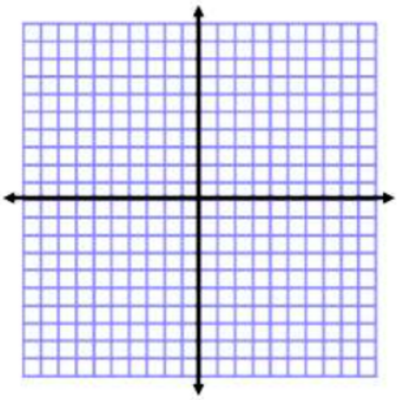


Determine each transformation and then give the transformation that would map A to A".

yes

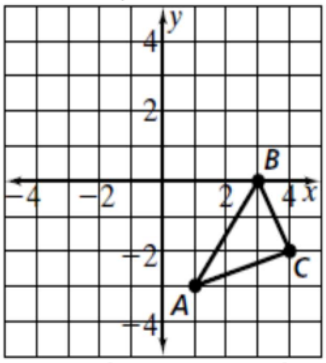
8. $A(2,3) \rightarrow A'(3,2) \rightarrow A''(-3,-2)$
9. $A(5,-3) \rightarrow A'(3,5) \rightarrow A''(3,-5)$
10. $A(-2,-1) \rightarrow A'(-2,1) \rightarrow A''(2,1)$
11. $A(4,3) \rightarrow A'(-3,-4) \rightarrow A''(3,-4)$
12. $A(-3,4) \rightarrow A'(3,4) \rightarrow A''(3,-4)$
13. $A(2,3) \rightarrow A'(3,2) \rightarrow A''(-2,3)$
14. $A(2,3) \rightarrow A'(3,2) \rightarrow A''(-3,2)$
15. $A(2,3) \rightarrow A'(-2,-3) \rightarrow A''(-3,-2)$
16. $A(2,3) \rightarrow A'(3,-2) \rightarrow A''(-3,-2)$





Combinations Practice Name: ______________________________ Date: ___________________

Rotate ΔABC 270° *counterclockwise*. Then reflect it over the x-axis. What additional transformation will be needed to map ΔA″B″C″ back to ΔABC?



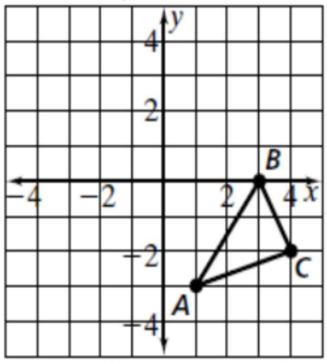
A ________ → A′ __________ →A″ ________ →A_______

B ________ → B′ __________ →B″ ________ →B_______

C ________ → C′__________ →C″ ________ →C_______

TRANSFORMATION:

Rotate ΔABC 180° *counterclockwise*. Then reflect it over the X-axis. What additional transformation will be needed to map ΔA″B″C″ back to ΔABC?



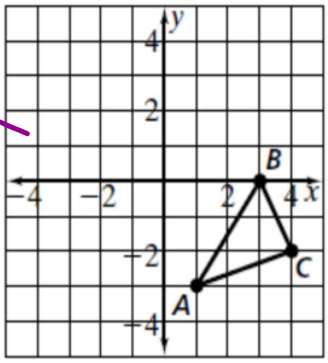
A ________ → A′ __________ →A″ ________ →A_______

B ________ → B′ __________ →B″ ________ →B_______

C ________ → C′__________ →C″ ________ →C_______

TRANSFORMATION:

Reflect ΔABC *over* $y = 1$. Then reflect it over the $x = 1$. What additional transformation will be needed to map ΔA″B″C″ back to ΔABC?



A ________ → A′ __________ →A″ ________ →A_______

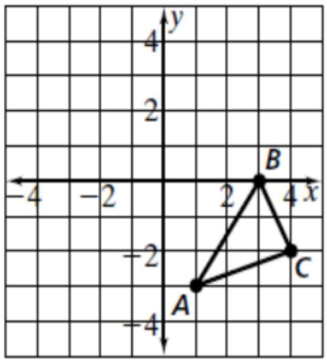
B ________ → B′ __________ →B″ ________ →B_______

C ________ → C′__________ →C″ ________ →C_______

TRANSFORMATION:

NONE

Reflect ΔABC *over* $y = -x$. Then reflect it over the x-axis. What additional transformation will be needed to map ΔA″B″C″ back to ΔABC?



A ________ → A′ __________ →A″ ________ →A_______

B ________ → B′ __________ →B″ ________ →B_______

C ________ → C′__________ →C″ ________ →C_______

TRANSFORMATION:

Sep 28-9:37 AM

Combinations Practice Name: ______________________________ Date: ___________________

yes

1: If the domain of a function that is reflected over the y-axis is (1,4), (3,-2), (-1,7), what is the range?

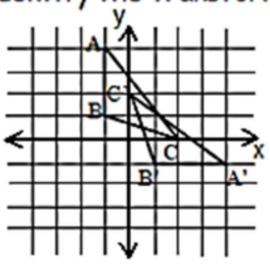
2: If the domain of the coordinate transformation $f(x, y) = (y + 3, -x + 24)$ is (1,4), (3,-2), (-1,7), what is the range?

3: If the range of the coordinate transformation $f(x, y) = (-3x, -2y + 3)$ is (3,-7), (-12,-9), (6,11), what is the domain?

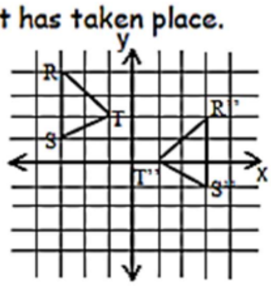
4. State the domain and range

Identify the transformation(s) that has taken place.

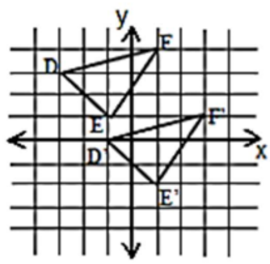
a.



b.



c.



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