

Name: KEY

Date: _____ Period: _____ Geo. w/ Trig

Unit 3 Test Review

Perform each transformation on the point $A(-3, -1)$ to find the image point A' .

1) A reflection in the x-axis

$A'(-3, 1)$

2) A reflection in line $x = -1$

$A'(1, -1)$

3) A rotation 90° ccw about $(3, -2)$

$A'(2, -8)$

4) A rotation 180° cw about $(0, 0)$

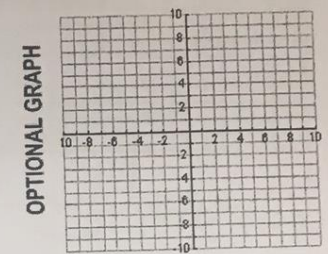
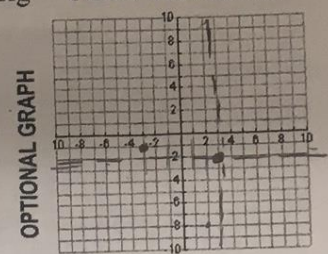
$(3, 1)$

5) A translation by $(x, y) \rightarrow (x - 2, y + 4)$

$A'(-5, 3)$

6) A translation by $\langle 1, -5 \rangle$

$A'(-2, -6)$



Given the vertices of $\triangle ABC$, complete each statement with the correct description of the transformation mapping $\triangle ABC$ onto $\triangle A'B'C'$. (Hint: Only look at a pair of corresponding points, such as A to A' . Check your answer!)

7) $A(-2, 4), B(6, 2), C(3, -2)$ is translated to $A'(4, -3), B'(12, -5), C'(9, -9)$ by vector $\langle 6, -7 \rangle$.

8) $A(-2, 4), B(6, 2), C(3, -2)$ is rotated to $A'(4, 2), B'(2, -6), C'(-2, -3)$ by 90° CW about $(0, 0)$.

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

or 270° CCW

9) Translate the line $y = 2x - 3$ by the vector $\langle -3, 2 \rangle$. Write the equation of the image in slope intercept form.

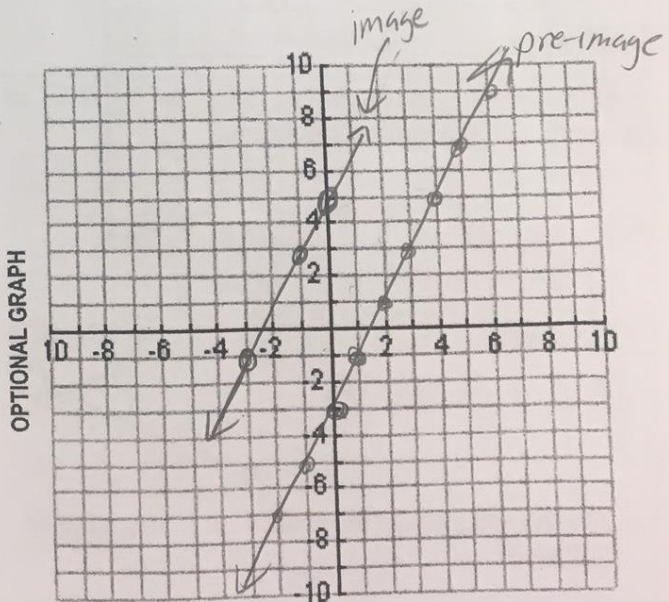
Pre Image Image

$(0, -3) \rightarrow (-3, -1)$

$(3, 2) \rightarrow (0, 4)$

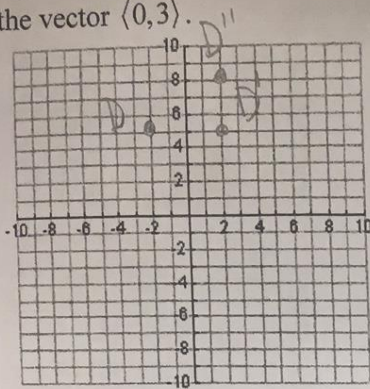
$m = 2$
 $b = 5$

$y = 2x + 5$



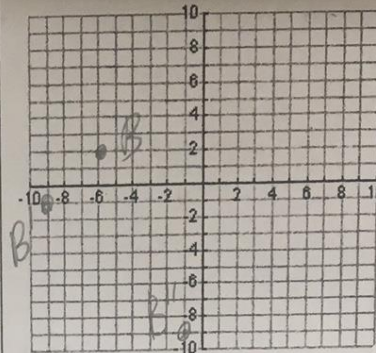
Perform the following compositions for #10 and 11.

10) Reflect $D(-2, 5)$ in the y -axis, then translate by the vector $\langle 0, 3 \rangle$.



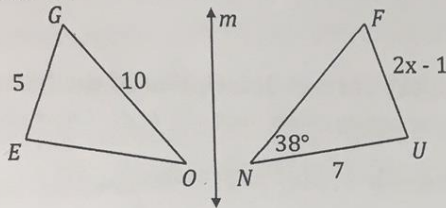
$D(-2, 5) \rightarrow D'(2, 5) \rightarrow D''(2, 8)$

11) Translate $B(-6, 2)$ by the vector $\langle -3, -3 \rangle$, then reflect in the line $y = x$.



$B(-6, 2) \rightarrow B'(-9, -1) \rightarrow B''(-1, -9)$

12) In the diagram to the right, $\triangle GEO \rightarrow \triangle FUN$ by a reflection in line m .



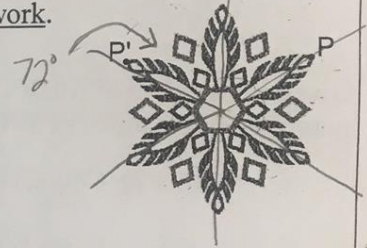
Find x : 3 $EG = UF \Rightarrow 2x - 1 = 5$
 $2x = 6$
 $x = 3$

Fill in the blanks:

$\angle O \cong \angle N$ $\overline{FN} \cong \overline{GO}$
 $\overline{OE} \cong \overline{NU}$ $\triangle GEO \rightarrow \triangle FUN$

13) Find the angle of rotation to the nearest tenth of a degree that maps P onto P' . Include the direction of the rotation! Show all work.

$\frac{360}{6} = 60^\circ$



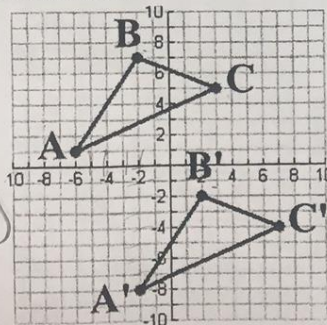
240° ccw 120° ccw

14) Describe the translation of $\triangle ABC$ to $\triangle A'B'C'$ as a vector and in coordinate notation.

Vector: $\langle 4, -9 \rangle$

Coordinate:

$(x, y) \rightarrow (x+4, y-9)$



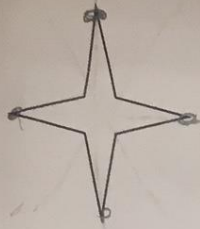
- Are the areas of $\triangle ABC$ and $\triangle A'B'C'$ the same or different? Same
- Are the perimeters of $\triangle ABC$ and $\triangle A'B'C'$ the same or different? Same

15) Consider the translation that is defined by the following coordinate notation: $(x, y) \rightarrow (x+2, y-4)$

a) What is the image of $(-1, 3)$? $(1, -1)$
 $x: -1+2 = 1$ $y: 3-4 = -1$

b) What is the pre-image of $(-5, 4)$? $(-7, 8)$
 $x: -5-2 = -7$ $y: 4+4 = 8$
 work backwards

16) Does the figure have rotational symmetry? If yes, describe the order and magnitude.



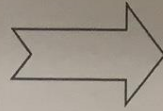
Circle one: yes or no

If yes:

Order: 4

Magnitude: 90°

17) Does the figure have rotational symmetry? If yes, describe the order and magnitude.



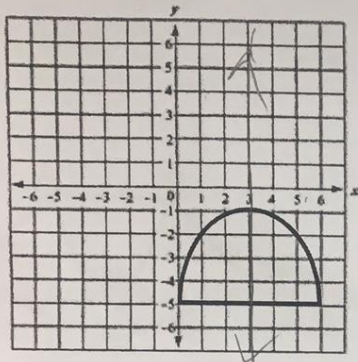
Circle one: yes or no

If yes:

Order: _____

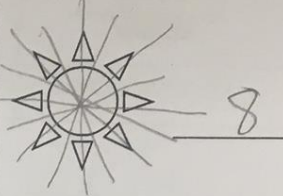
Magnitude: _____

18) Name which line(s) of symmetry maps the figure onto itself.



$x=3$

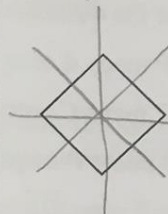
19) How many lines of symmetry does each figure have?



8



infinite



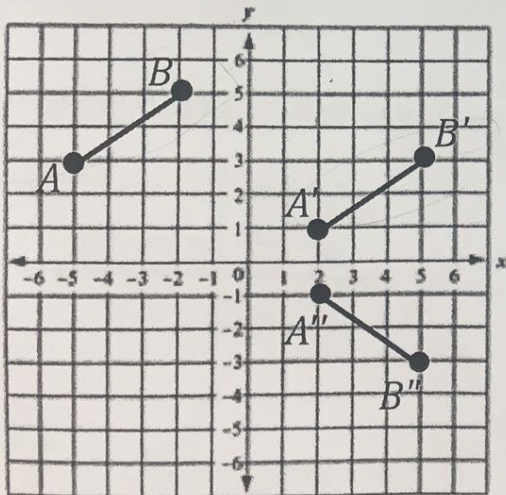
4



1

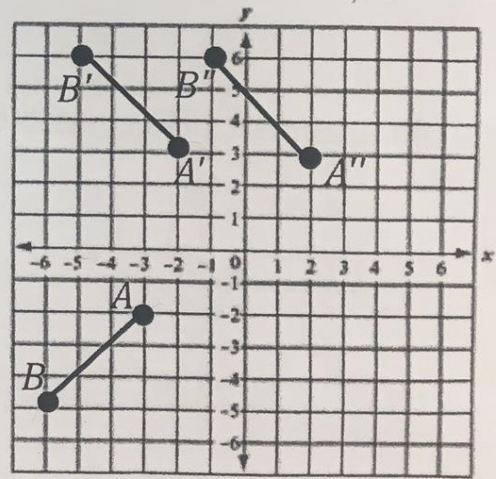
For #20-21, write a composition that maps \overline{AB} onto $\overline{A''B''}$.

20)



- Translate along $\langle 7, -2 \rangle$
- Reflect in x-axis

21)

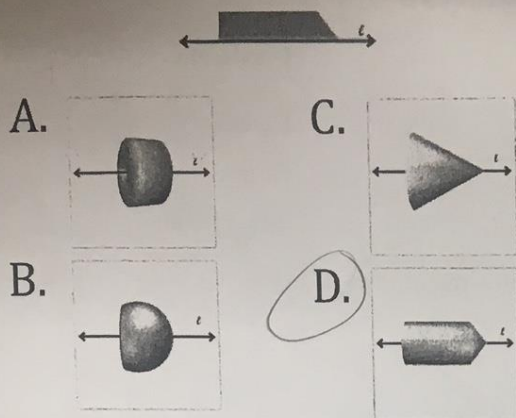


- Rotate 270° CCW (or 90° CW)
- Translate along $\langle 4, 0 \rangle$

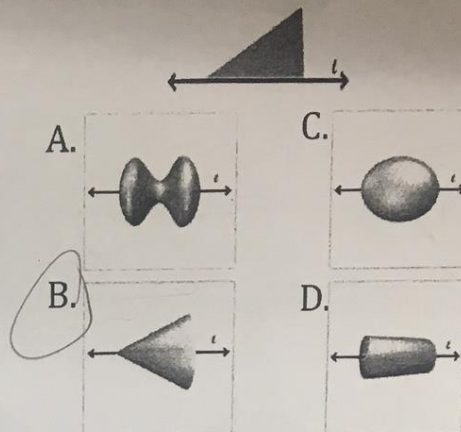
$A(-3, -2) \rightarrow A'(-2, 3)$ ^{$y, -x$}

For #22-23, identify the solid of revolution generated by revolving around the fixed line l .

22)

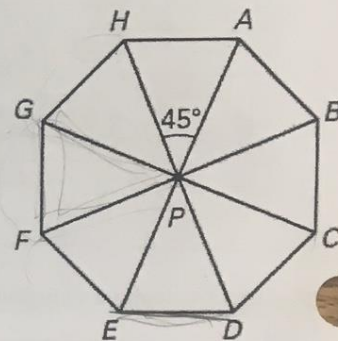


23)



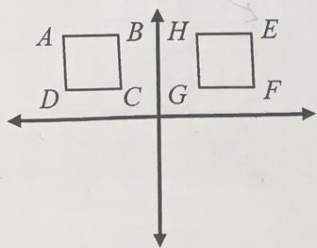
24) Use the diagram to find the image after the described rotation.

- A clockwise rotation of 45° about P maps A onto B .
- A clockwise rotation of 90° about P maps C onto E .
- A counterclockwise rotation of 90° about P maps H onto F .
- A clockwise rotation of 180° about P maps \overline{DE} onto \overline{HA} .
- A counterclockwise rotation of 45° about P maps $\triangle GPF$ onto $\triangle FPE$.



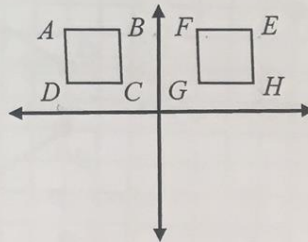
For #25-26, given square $ABCD \rightarrow$ square $EFGH$, describe the transformation. Circle the correct answer.

25)



- Reflection in the x -axis
- Reflection in the y -axis
- Rotation 90° cw about the origin (circled)
- Rotation 180° cw about the origin

26)



- Reflection in the x -axis
- Reflection in the y -axis (circled)
- Rotation 90° cw about the origin
- Rotation 180° cw about the origin