Name:_____

Monica

Geometry Period:____

Date:_____

Directions: Questions 1 – 10 are multiple choice. Choose the best answer for each question. For questions 11 – 15, read the question carefully and be sure to answer the question being asked!

1) What are the coordinates of M', the image of $M(2,4)$, after a counterclockwise rotation of 90º about the origin?

      1) (-2, 4)   2) (-2, -4)   **3) (-4, 2)**   4) (-4, -2)

2) What are the coordinates of point $(2,-3)$ after it is reflected over the x-axis?

      1) (2,3)   2) (-2, 3)   3) (-2, -3)   4) (-3, 2)

3) A translation moves $P(3,5)$ to $P'(6,1)$. What are the coordinates of the image of point $(-3,-5)$ under the same translation?

      1) (0, -9)   2) (-5, -3)   3) (-6, -1)   4) (-6, -9)

4) What are the coordinates of point $(-1,4)$ under dilation D_{-2}?

      1) (-2, 8)   **2) (2, -8)**   3) (-8, 2)   4) (8, -2)

5) What is the image of point $A(4,2)$ after the composition of transformations defined by $R_{90°} \circ r_{y=x}$?

      1) (-4, 2)   2) (4, -2)   3) (-4, -2)   4) (2, -4)

6) A transformation of a polygon that always preserves both length and orientation is

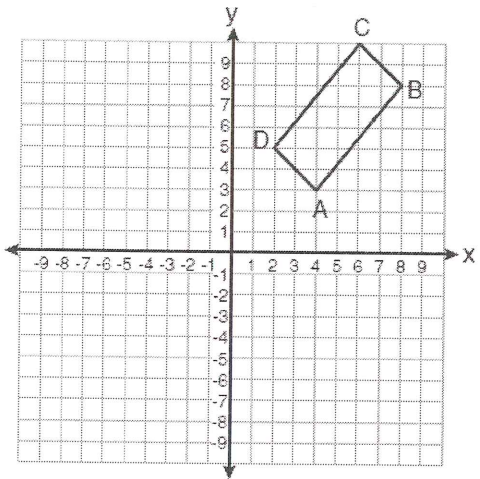   1) Dilation   **2) Translation**   3) Line reflection   4) Glide reflection

7) The vertices of parallelogram $ABCD$ are $A(2,0)$, $B(0,-3)$, $C(3,-3)$, and $D(5,0)$. If $ABCD$ is reflected over the x-axis, how many vertices remain invariant?

      1) 1   **2) 2**   3) 3   4) 0
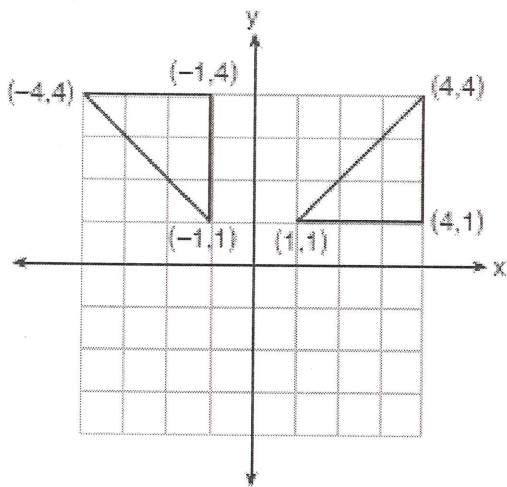
8) Which transformation is *not* always an isometry?

      1) Rotation   2) Translation   3) Reflection   **4) Dilation**

9) The rectangle $ABCD$ shown in the diagram below will be reflected across the x-axis. What will *not* be preserved?

1) slope of $\overline{AB}$
2) parallelism of $\overline{AB}$ and $\overline{CD}$
3) length of $\overline{AB}$
4) measure of $\angle A$

10) Which type of transformation is illustrated in the accompanying diagram?

1) dilation
2) reflection
3) translation
4) rotation

11) On the coordinate plane below, graph the equation $(x+2)^2 + (y-1)^2 = 9$. Graph the image of this equation under the transformation D_{-2}. Write the equation of this graph.
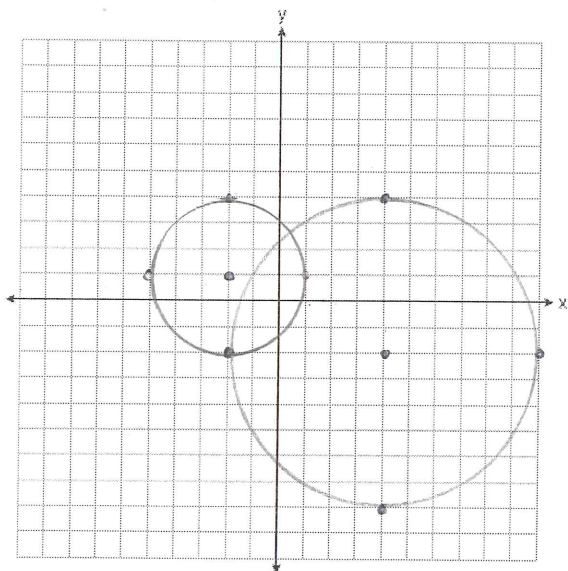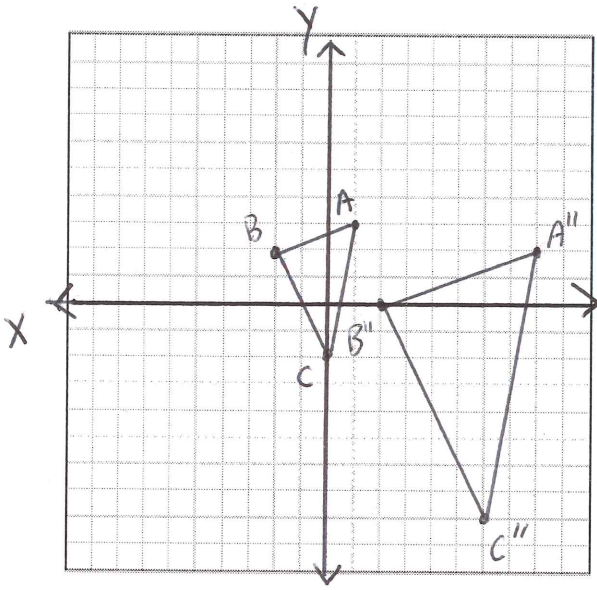

center = $(-2, 1)$ radius = 3

$(-2, 1) \xrightarrow{D_{-2}} (4, -2)$

radius $\xrightarrow{D_{-2}}$
3   -6

$(x-4)^2 + (y+2)^2 = 36$

12) The coordinates of the vertices of $\triangle ABC$ $A(1,3)$, $B(-2,2)$ and $C(0,-2)$. On the grid below, graph and label $\triangle A''B''C''$, the result of the composite transformation $D_2 \circ T_{3,-2}$. State the coordinates of A'', B'', and C''. Is this an isometry? Why or why not?


$$A(1,3) \xrightarrow{T_{3,-2}} (4,1) \xrightarrow{D_2} A''(8,2)$$

$$B(-2,2) \xrightarrow{T_{3,-2}} (1,0) \xrightarrow{D_2} B''(2,0)$$

$$C(0,-2) \xrightarrow{T_{3,-2}} (3,-4) \xrightarrow{D_2} C''(6,-8)$$

It is not an isometry because the image is not congruent to the pre-image.

13) On the accompanying set of axes, draw $\triangle ABC$, whose coordinates are $A(-7,9)$, $B(-2,8)$ and $C(-3,4)$. Then draw, label, and state the coordinates of $\triangle A'B'C'$, the image of $\triangle ABC$ after the transformation that maps (x,y) to $(-x,-y)$. Based on your diagram, identify the type of transformation that was performed.
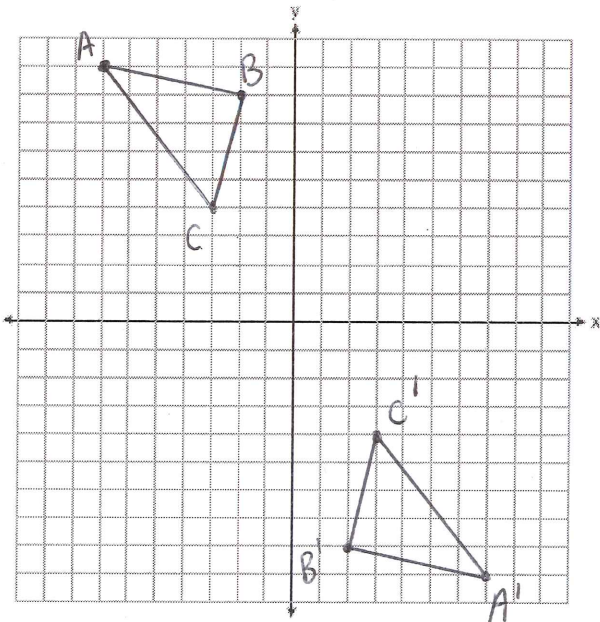
$$A(-7,9) \xrightarrow{(-x,-y)} A'(7,-9)$$

$$B(-2,8) \xrightarrow{(-x,-y)} B'(2,-8)$$

$$C(-3,4) \xrightarrow{(-x,-y)} C'(3,-4)$$

This transformation is $R_{180°}$.

CHALLENGE: Design your own transformation question! It could earn you an ES!