Name: Key Date: _____

Transformations Review Sheet

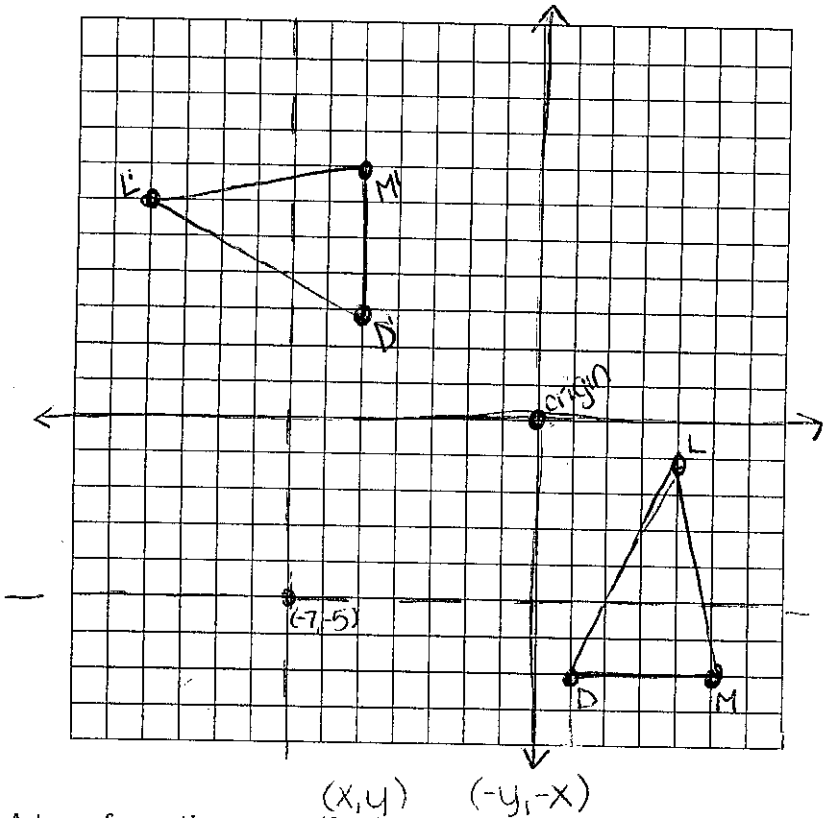
1. The point (−2, 1) is rotated 180° about the origin in a clockwise direction. What are the coordinates of its image?

(2, −1)

2. Graph and state the coordinates of triangle D'L'M' the image of triangle DLM after a rotation 90 degrees about point R (− 7, −5). Be sure to graph triangle DLM and show all the necessary steps to find the new coordinates.

D (1,−7) L (4 ,−1) M (5,−7)

D'(-5,3) L'(-11,6) M'(-5,7)



Work

(8, -2) → (2, 8)

(12, -2) → (2, 12)

(11, 4) → (-4, 11)

(x, y) (-y, -x)

3. A transformation maps (3, 5) onto (-5, -3). This transformation is equivalent to a

(1) rotation of 90°

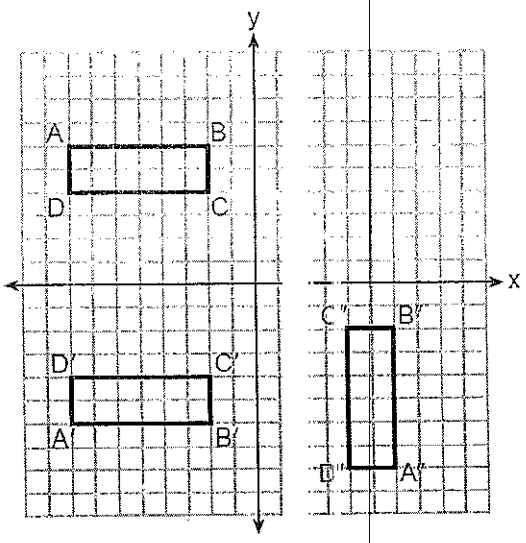
(2) reflection in the line y = -x

(3) reflection in the line y = x

(4) translation of -5, -3

4.

A sequence of transformation maps rectangle $ABCD$ onto rectangle $A''B''C''D''$, as shown in the diagram below.



Which sequence of transformation maps $ABCD$ onto $A'B'C'D'$ and then maps $A'B'C'D'$ onto $A''B''C''D''$?

(1) a reflection followed by a rotation

(2) a reflection followed by a translation

(3) a translation followed by a rotation

(4) a translation followed by a reflection

5. A regular octagon is rotated clockwise around its center, the minimum number of degrees it must be rotated to carry the octagon onto itself is:

(1) 45°

(2) 72°

(3) 108°

(4) 360°

$\frac{360}{8} = 45$

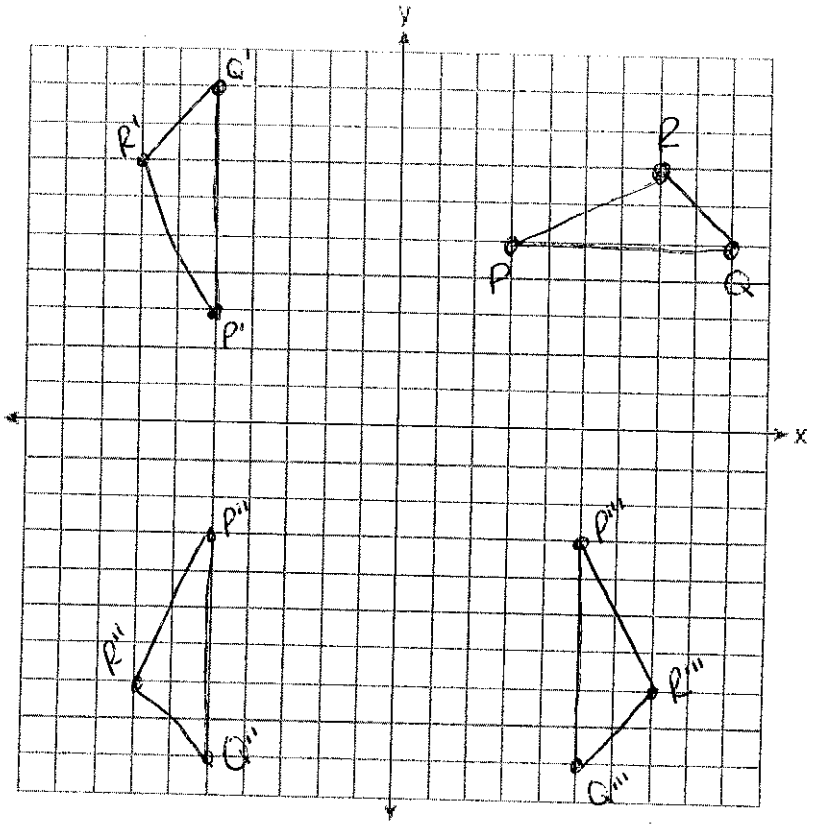
11. On the graph below, draw and label $\triangle PQR$, whose vertices are $P(3,5)$, $Q(9,5)$, and $R(7,7)$. On the same set of axes, graph and state the coordinates of

a) $\triangle P'Q'R'$, the image of $\triangle PQR$ after $R_{90°}$. $P'(-5,3)$ $Q'(-5,9)$ $R'(-7,7)$

b) $\triangle P''Q''R''$, the image of $\triangle P'Q'R'$ after r_{x-axis}. $P''(-5,-3)$ $Q''(-5,-9)$ $R''(-7,-7)$

c) $\triangle P'''Q'''R'''$, the image of $\triangle P''Q''R''$ after r_{y-axis}. $P'''(5,-3)$ $Q'''(5,-9)$ $R'''(7,-7)$

d) Based upon these graphs, write a single transformation that shows the composition $r_{y-axis} \circ r_{x-axis} \circ R_{90°}$.

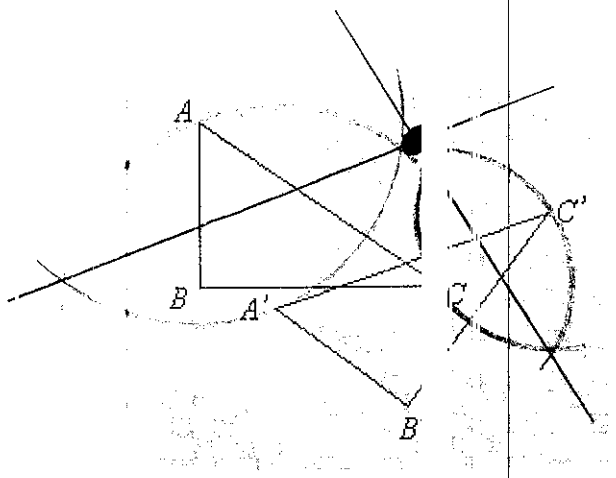


$(3,5) \rightarrow (5,-3)$

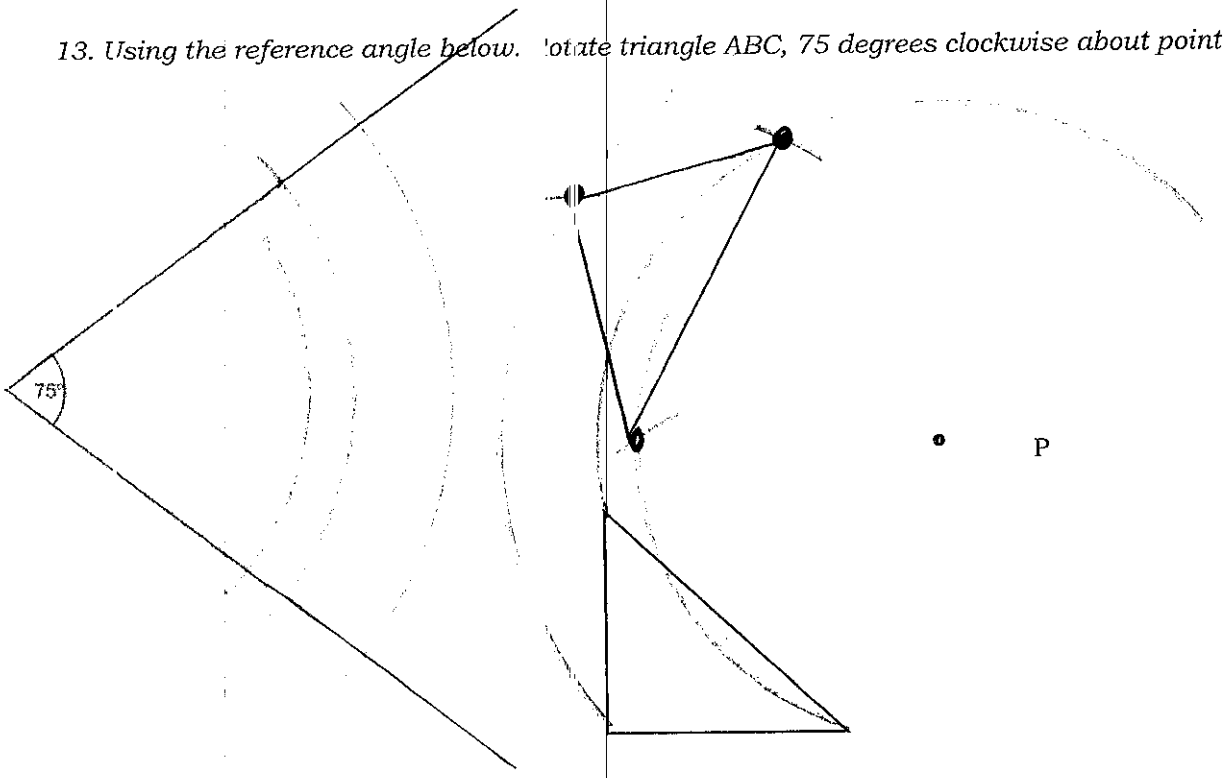
$(x,y) \rightarrow (y,-x)$

$R_{270°}$

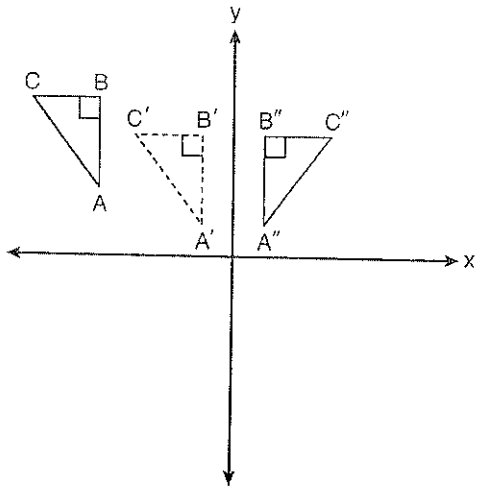
12. Using a compass and straighted; find the center of rotation.



13. Using the reference angle below. Rotate triangle ABC, 75 degrees clockwise about point P.



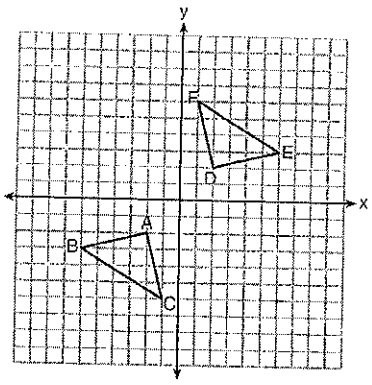
6. In the diagram below, $\triangle A'B'C'$ is a transformation of $\triangle ABC$, and $\triangle A''B''C''$ is a transformation of $\triangle A'B'C'$.



The composite transformation of $\triangle ABC$ to $\triangle A''B''C''$ is an example of a

1) reflection followed by a rotation
2) reflection followed by a translation
3) translation followed by a rotation
4) translation followed by a reflection

7. Triangle *ABC* and triangle *DEF* are graphed on the set of axes below.



Which sequence of transformations maps triangle *ABC* onto triangle *DEF*?

1) a reflection over the x-axis followed by a reflection over the y-axis
2) a 180° rotation about the origin followed by a reflection over the line $y = x$
3) a 90° clockwise rotation about the origin followed by a reflection over the y-axis
4) a translation 8 units to the right and 1 unit up followed by a 90° counterclockwise rotation about the origin

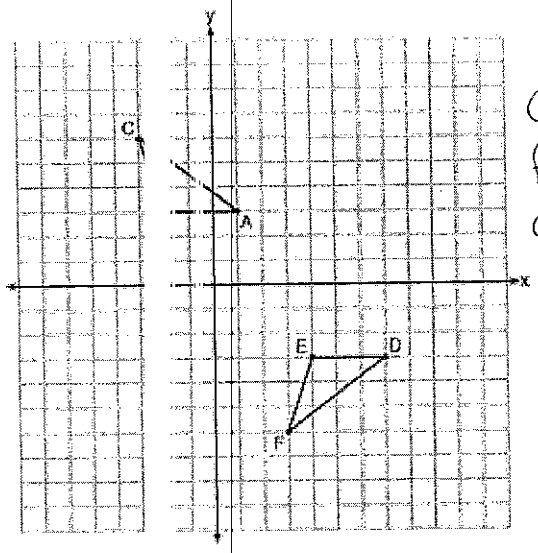
8. The image of (4, 7) under a certa translation is the point (2,-6). What is the image of point (-3,-2) under the same translation?

T -13

$(-3,-2) \rightarrow (-5,-15)$

9.

Describe a sequence of transformati is that will map $\triangle ABC$ onto $\triangle DEF$ as shown below.



a translation 6 units right followed by a reflection over the x-axis

10. Given: ΔMAD has coordinates M -3, 4), A(2, 9), and D(-1, -2).

a) State the coordinates of e vertices of ΔM'A'D', the image of ΔMAD under the composition $R_{90°} \circ r_{x\text{-axis}}$.

$M(-3,4) \xrightarrow{rxc} (-3,-4) \xrightarrow{R_{90}} M'(4,-3)$

$A(2,9) \rightarrow (2,-9) \rightarrow A'(9,2)$

$D(-1,-2) \rightarrow (-1,2) \rightarrow D'(-2,-1)$

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

b) What single translation ansformation is equivalent to $R_{90°} \circ r_{x\text{-axis}}$?

$r_{y=x}$