Name:

Common Core Geometry

Unit 2

Transformations and Rigid Motions

Mr. Schlansky

2025

Lesson 1: I can translate points by counting on the graph.
Count the given translation from each vertex of the shape

Lesson 2: I can rotate points by turning the graph and writing down the new points.
1) Plot the original points.
2) Turn your paper (counter-clockwise top goes left, clockwise top goes right).
3) Write down new points.
4) Turn your paper back.
5) Plot new coordinates.

Lesson 3: I can perform a line reflection counting to the line of reflection in one direction.
Count to the line you are reflecting over. Count through the same amount to the other side.
y = # is horizontal line, x = # is vertical line
*For reflection over the line $y = x$, switch the points. $(x, y) \rightarrow (y, x)$

Lesson 4: I can perform a point reflection counting to the point of reflection in two directions.
A point reflection is a rotation of 180!
Count to the point that you are reflecting over. Count through the same amount to the other side.

Lesson 5: I can perform transformations by counting on the graph (translation), turning my paper (rotation), counting to the line of reflection in one direction (line reflection), and counting to the point of reflection in two dimensions (point reflection).
Same notes as Lessons 1-4.

Lesson 6: I can determine which sides/angles are congruent after a rigid motion by redrawing the shapes and checking to see what corresponds.
A rigid motion always produces a congruent figure!
-Redraw the shapes and label them in the same order.
-If the sides/angles correspond, they are congruent. If they don't, then they are not congruent.
Algebra: If they are congruent, set them equal to each other.

Lesson 7: I can identify rigid motions by checking for orientation! I can explain why shapes are congruent using the definition of a rigid motion.
CHECK FOR ORIENTATION!!!!! If the orientation is different, there must be a single line reflection. If the orientation is the same, it can't be a single line reflection.
A point reflection is not a line reflection!
A RIGID MOTION PRESERVES SIZE AND ANGLE MEASURE PRODUCING A CONGRUENT FIGURE!

Lesson 8: I can identify sequences of rigid motions by checking for orientation! (Multiple Choice)
CHECK FOR ORIENTATION!
If orientation is the same, cross out any choices with a single line reflection
If orientation is different, cross out any choices that don't have a single line reflection

Lesson 9: I can identify sequences of rigid motions by checking for orientation! (Open Response)
CHECK FOR ORIENTATION!
If orientation is the same: ROTATE centered at a point on the original shape first, and then translate the rest of the way.
Rotate Δ ________ 90/180 degrees clockwise/counter-clockwise centered at point __
If orientation is different: REFLECT over the appropriate axis first, and then translate the rest of the way.
Reflect Δ ________ over the __ axis

Lesson 10: I can map a shape by itself by identifying a line of symmetry for reflections and the center being the center for rotations.
To map a shape onto itself:
Translation/Dilation: Never.
Reflection: **The line of reflection must be a line of symmetry** (cuts shape in half).
Rotation: **Center of rotation must be the center of the shape.** Common sense for degree measure.

Lesson 11: I can map a regular polygon onto itself by using 360/n to find the minimum rotation and understanding any multiple of that also maps it onto itself.

To determine the minimum number of degrees a regular polygon must be rotated to be mapped onto itself:

1) The minimum rotation is $\frac{360}{n}$.
2) Any multiple of that will also map the regular polygon onto itself!

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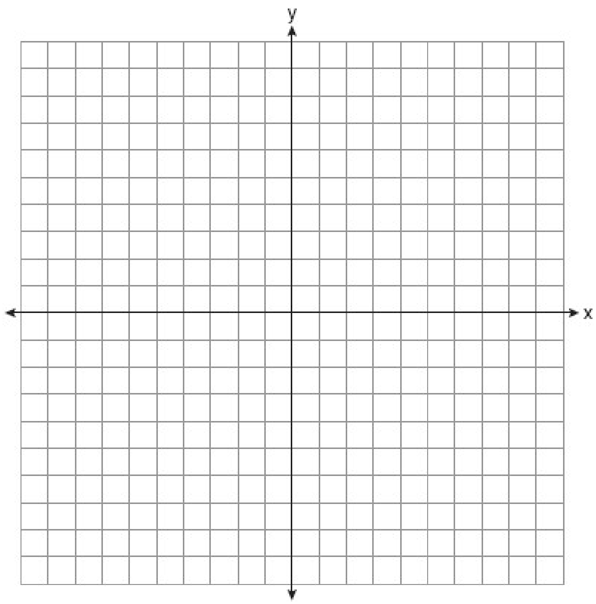
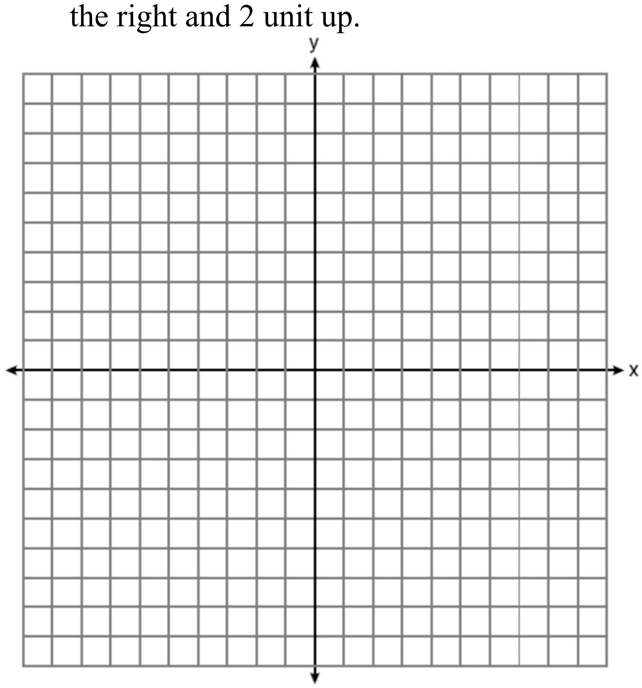
Mr. Schlansky Geometry

Translations

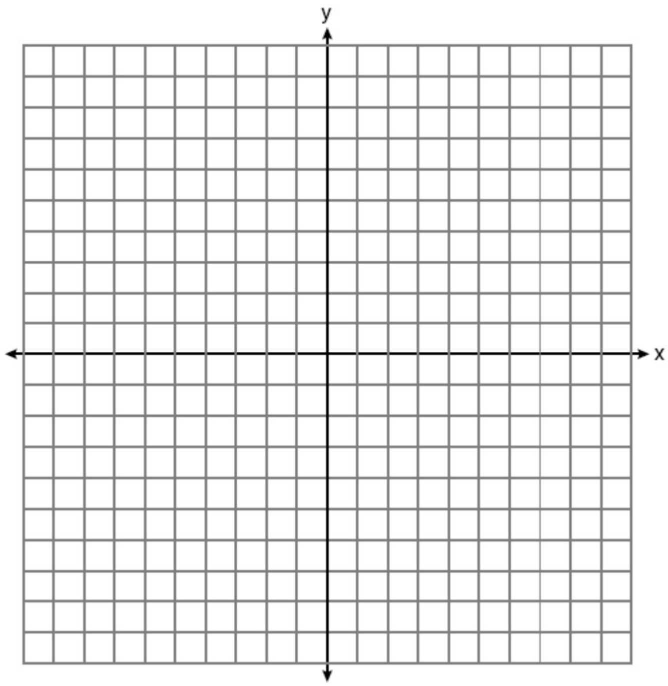
1. Triangle TAP has coordinates $T(-1,4)$, $A(2,4)$, and $P(2,0)$. On the set of axes below, graph and label $\triangle T'A'P'$, the image of $\triangle TAP$ after the translation 5 units to the left and 1 unit down.



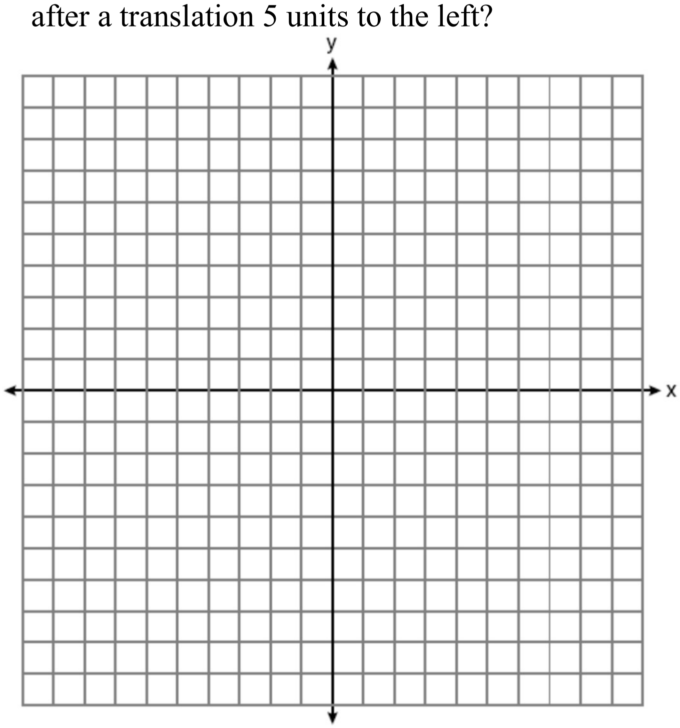
2. Graph the image of ΔXYZ with $X(-3,4)$, $Y(-1,1)$, and $Z(2,2)$ after a translation 3 units to the right and 2 unit up.



3. What is the image of ΔLMN with vertices $L(2,-3)$, $M(5,1)$ and $N(7,3)$ after a translation 2 units to the left and 4 units up?



4. Graph the image of quadrilateral ADEF with vertices $A(4,-1)$, $D(8,-2)$, $E(6,3)$, and $F(2,7)$ after a translation 5 units to the left?



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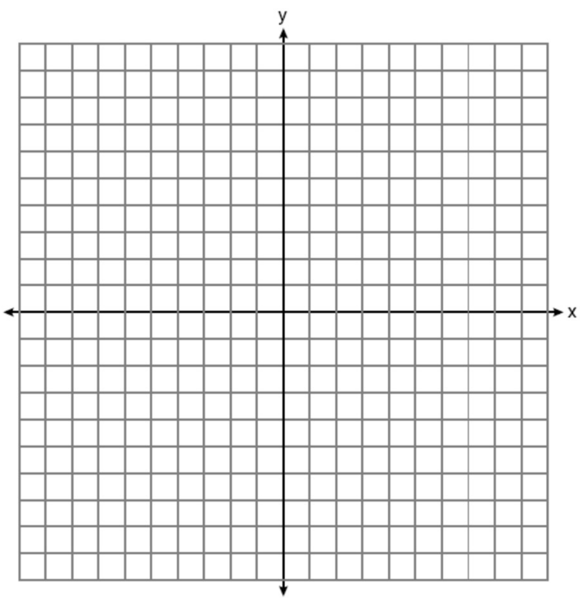
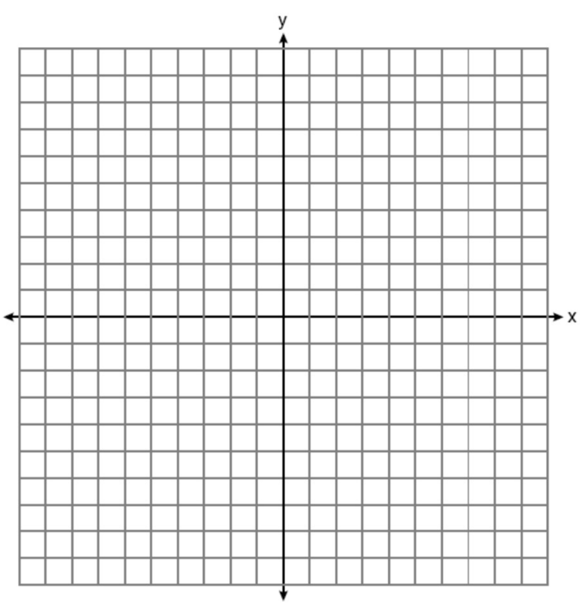
Rotations

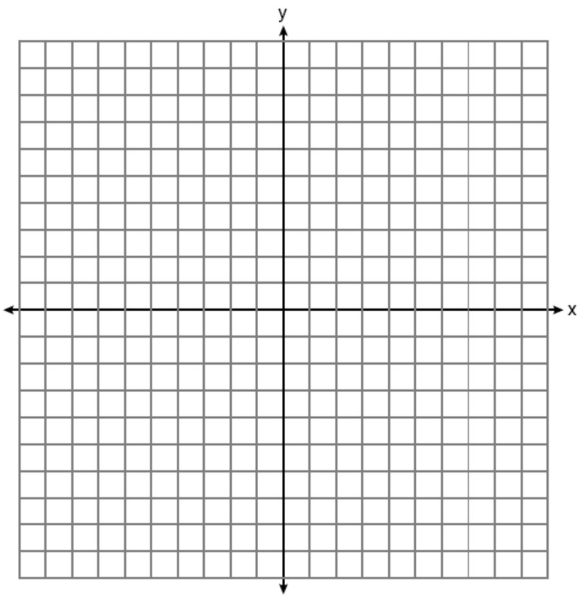
1. Triangle *SUN* has coordinates *S*(0,6), *U*(3,5), and *N*(3,0). On the accompanying grid, draw and label $\triangle SUN$. Then, graph and state the coordinates of $\triangle S'U'N'$, the image of $\triangle SUN$ after a counter-clockwise rotation of 90 centered at the origin.



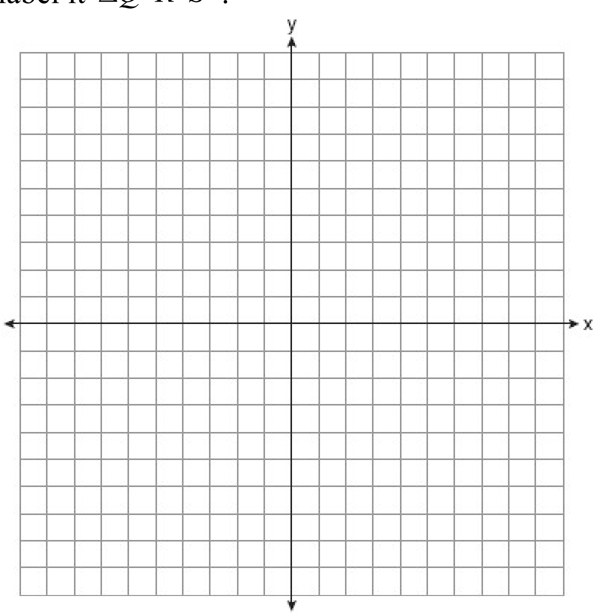
2. Triangle *ARF* has coordinates *A*(-3,6), *R*(5,2), and *F*(1,-4). On the accompanying grid, draw and label ΔARF. Then, graph and state the coordinates of $\Delta A'R'F'$, the image of ΔARF after a counter-clockwise rotation of 180 centered at the origin.



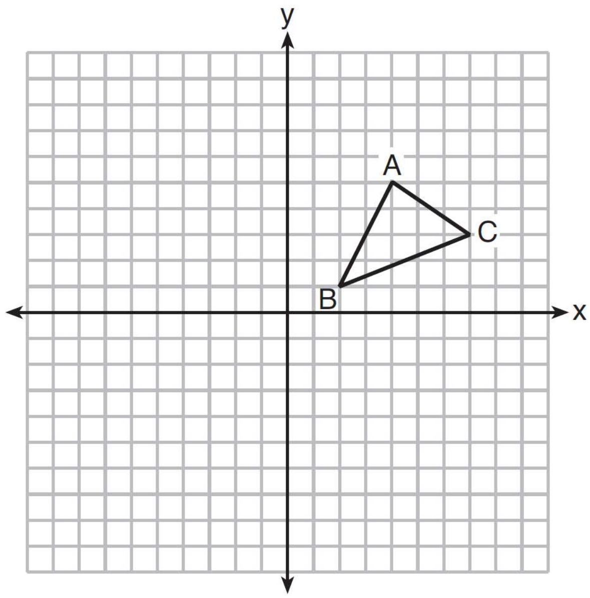
3. On the accompanying set of axes, graph ΔVXY if it is the image of $V(-2,3)$, $X(0,5)$, and $Y(4,4)$ after a counter-clockwise rotation of 270 centered at the origin.



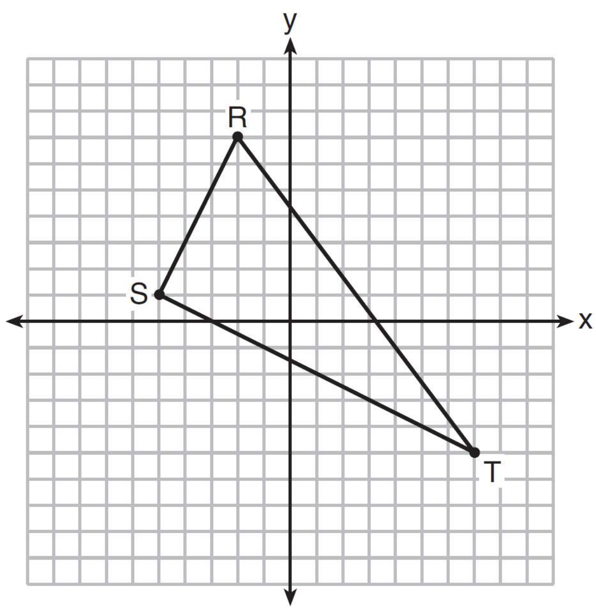
4. The coordinates of ΔQRS are $Q(-3,1)$, $R(-6,5)$, and $S(1,2)$. Graph and state the coordinates of the image of ΔQRS after a clockwise rotation of 90 centered at the origin and label it $\Delta Q'R'S'$.



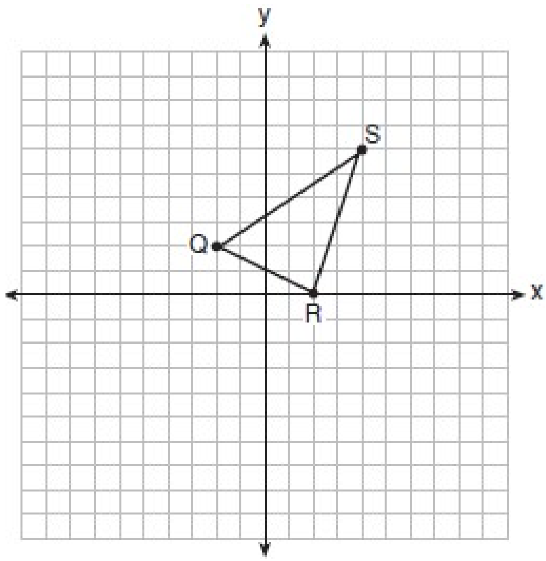
5. In the diagram below, $\triangle ABC$ is graphed with A(4,5), B(2,1), and C(7,3). Graph and state the coordinates of the image of $\triangle ABC$ after a clockwise rotation of 270 centered at the origin and label it $\Delta A'B'C'$.



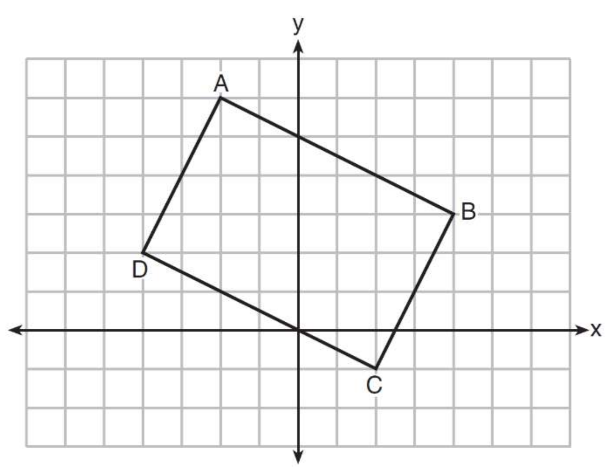
6. Triangle RST is graphed on the set of axes below with R(-2,7), S(-5,1), and T(7,-5). Graph the image of ΔRST after a clockwise rotation of 180 centered at the origin and label it $\Delta R'S'T'$.



7. Triangle *QRS* is graphed on the set of axes below. Graph and state the coordinates of $\Delta Q'R'S'$, the image of ΔQRS after a counter-clockwise rotation of 270 centered at the origin



8. Quadrilateral *ABCD* is graphed on the set of axes below. State the coordinates of quadrilateral $A'B'C'D'$, the image of quadrilateral *ABCD* after a clockwise rotation of 270 centered at the origin.



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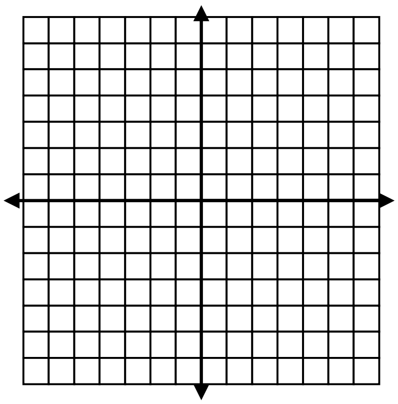
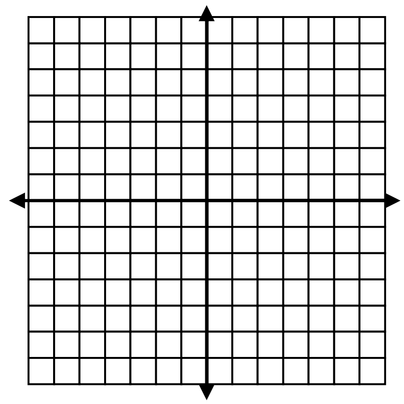
Graphing Straight Lines

Graph the following equations on the axes provided

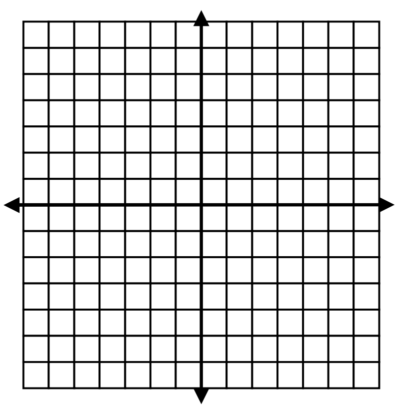
1. $y = 4$



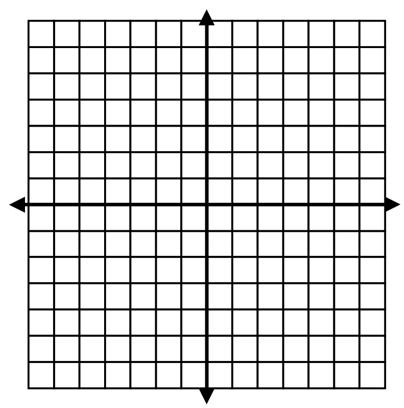
2. $x = 4$



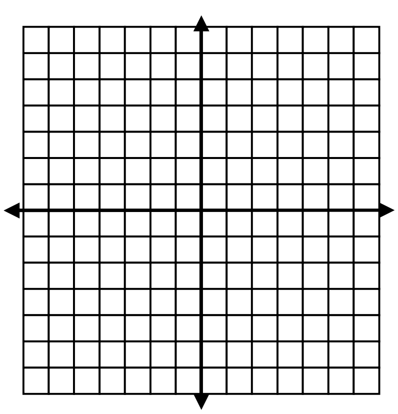
3. $y = -2$



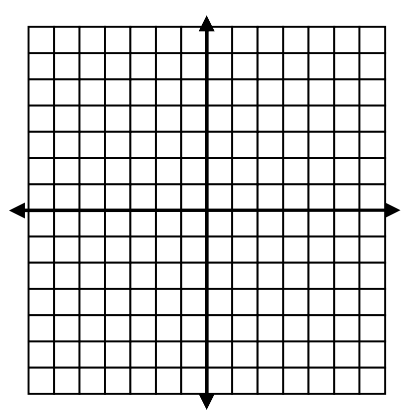
4. $x = -5$



5. $x = 2$



6. $y = -1$



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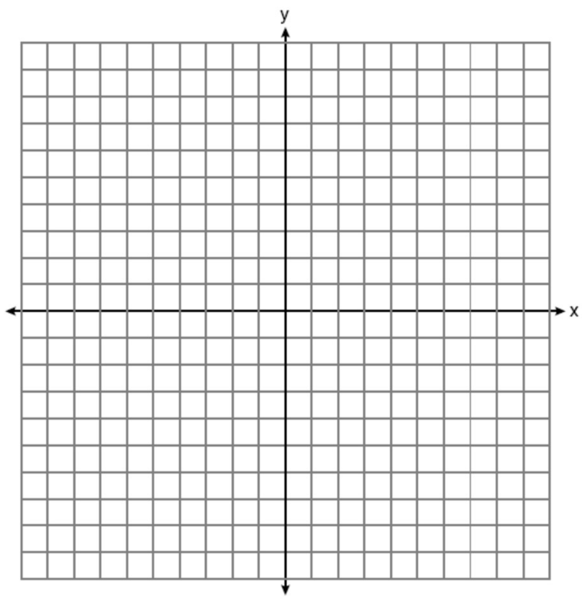
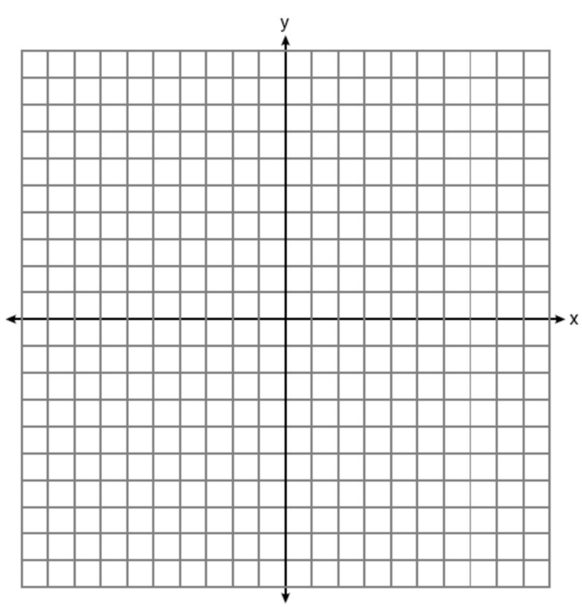
Line Reflections

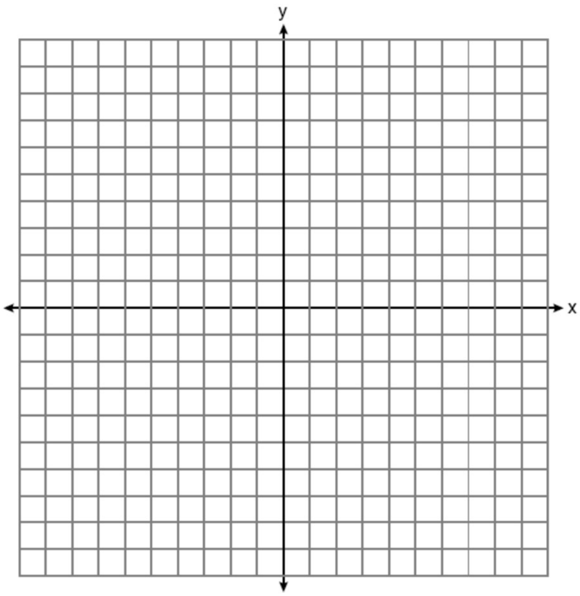
1. Triangle SUN has coordinates $S(0,6)$, $U(3,5)$, and $N(3,0)$. On the accompanying grid, draw and label $\triangle SUN$. Then, graph and state the coordinates of $\triangle S'U'N'$, the image of $\triangle SUN$ after a reflection over the x axis.



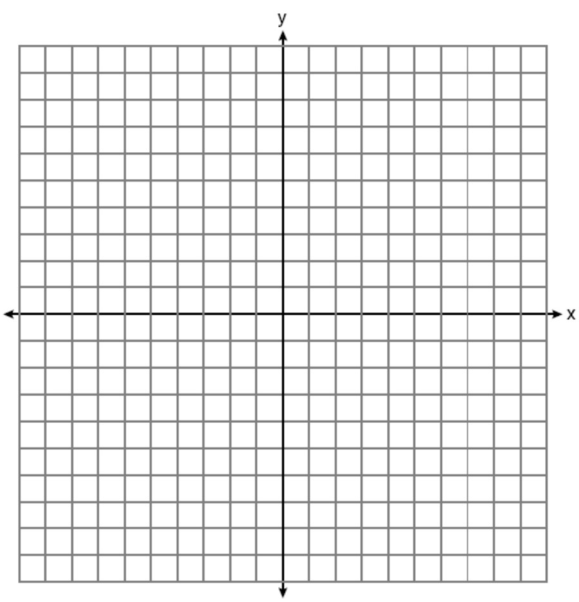
2. On the grid below, graph and label triangle ABC with vertices $A(3,1)$, $B(0,4)$, and $C(-5,3)$. On the same grid, graph and label triangle $A'B'C'$, the image of ABC after a reflection over the y axis.



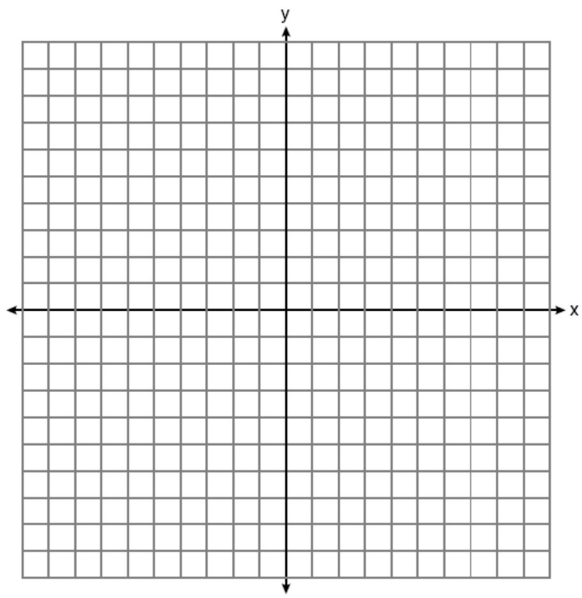
3. Triangle ABC has coordinates $A(2,1)$, $B(6,1)$, $C(5,3)$. What is the image of this triangle after a reflection over the line $x=4$. Graph both the image and the pre image.



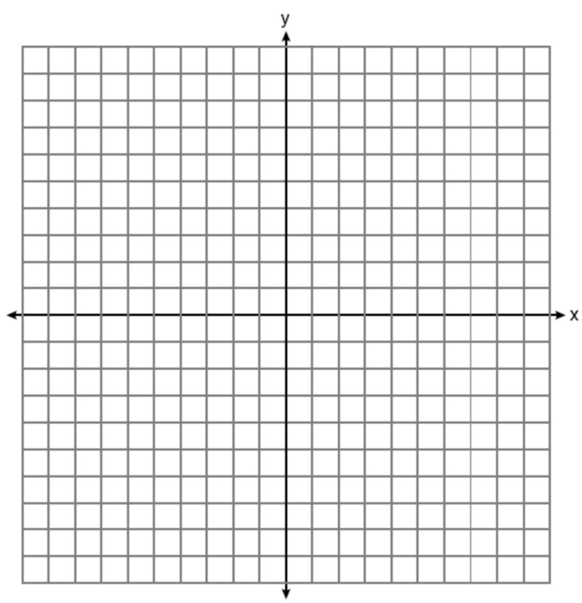
4. The coordinates of the vertices of $\triangle RST$ are $R(-2,3)$, $S(4,4)$, and $T(2,-2)$. Graph $\triangle RST$. Graph and label $\triangle R'S'T'$, the image of $\triangle RST$ after a reflection over the line $y=-2$.



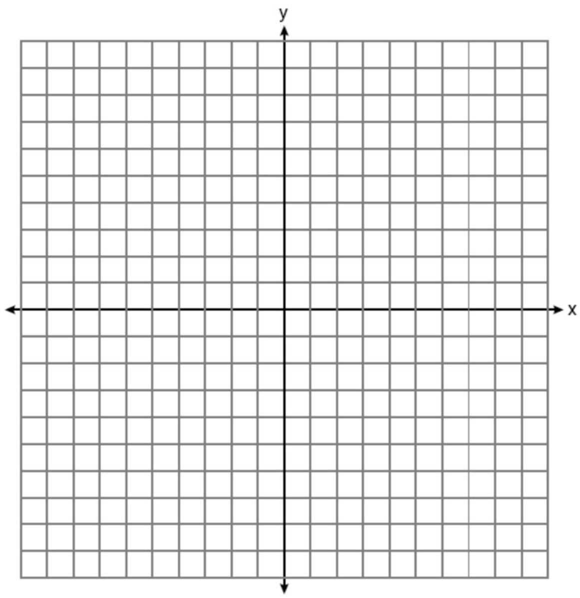
5. The coordinates of the vertices of ΔJKL are $J(8,-2)$, $K(6,1)$, and $L(-1,0)$. Graph ΔJKL. Graph and label $\Delta J'K'L'$, the image of ΔJKL after a reflection over the line $y=-3$.



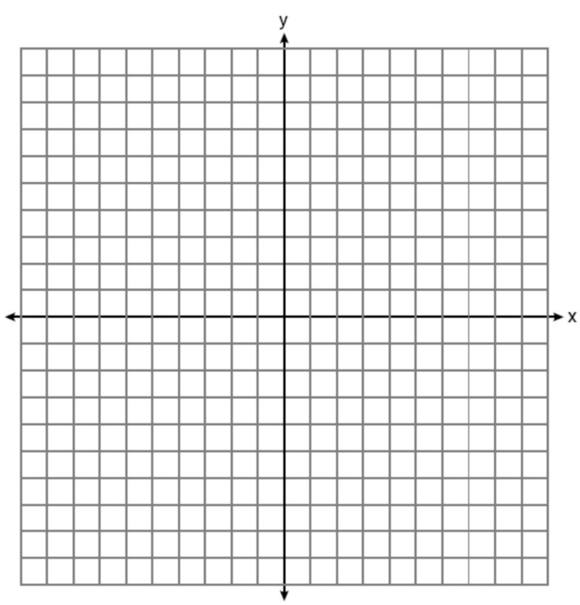
6. Triangle BIL has coordinates $B(-2,-5)$, $I(0,0)$, and $L(-5,-3)$. What is the image of this triangle after a reflection over the line $x=3$? Graph both the image and the pre image.



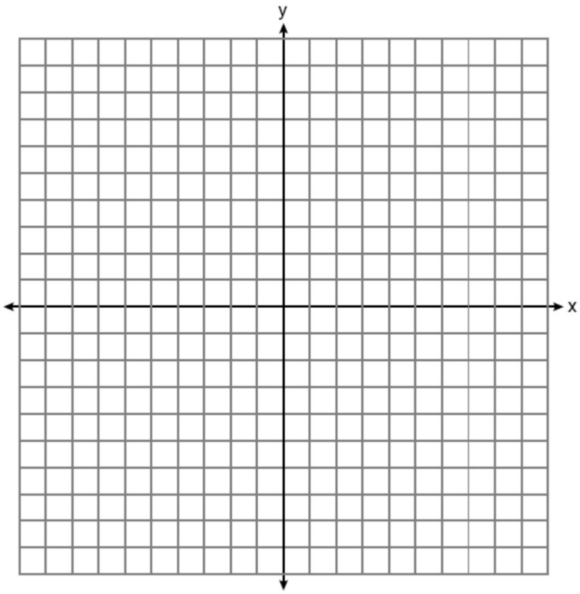
7. The coordinates of the vertices of ΔXYZ are $X(2,4)$, $Y(5,-2)$, and $Z(6,7)$. Graph ΔXYZ. Graph and label $\Delta X'Y'Z'$, the image of ΔXYZ after a reflection over the y axis.



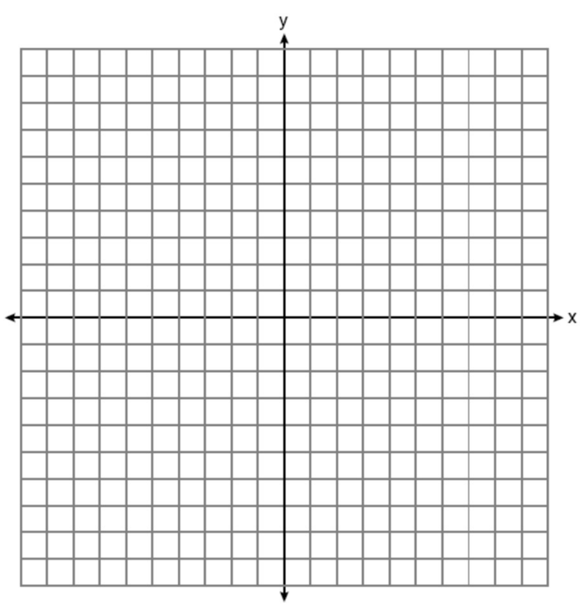
8. The coordinates of the vertices of ΔRAS are $R(8,-3)$, $A(2,-5)$, and $S(-1,2)$. Graph ΔRAS. Graph and label $\Delta R'A'S'$, the image of ΔRAS after a reflection over $y=-1$.



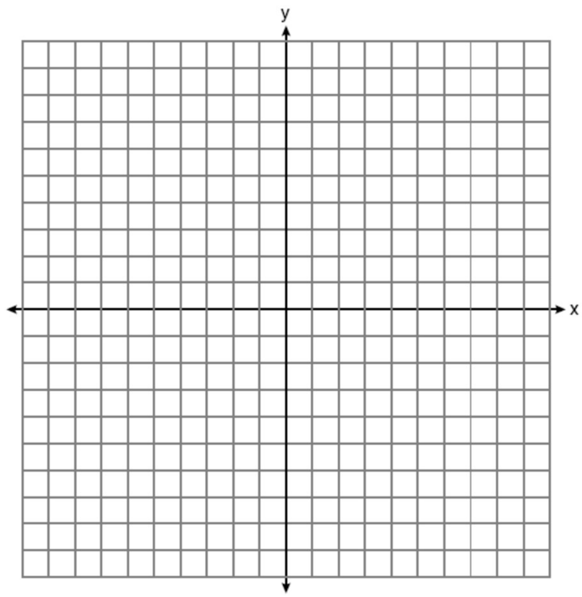
9. Triangle DAH has coordinates $D(4,-3)$, $A(2,-5)$, and $H(-3,7)$. What is the image of this triangle after a reflection over the $x-axis$? Graph both the image and the pre image.



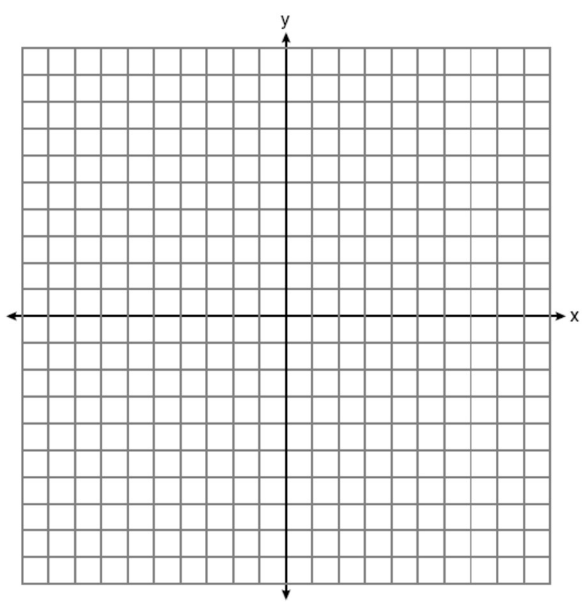
10. The coordinates of the vertices of ΔDYL are $D(-5,-2)$, $Y(-2,8)$, and $L(3,6)$. Graph and label $\Delta D'Y'L'$, the image of ΔDYL after a reflection over $x=-2$.



11. Triangle SBR has coordinates $S(-4,1)$, $B(-2,6)$, and $R(5,-2)$. What is the image of this triangle after a reflection over the line $y = x$? Graph both the image and the pre image.



12. Triangle KEV has coordinates $K(-4,1)$, $E(-2,5)$, and $V(3,-6)$. What is the image of this triangle after a reflection over the line $y = x$? Graph both the image and the pre image.



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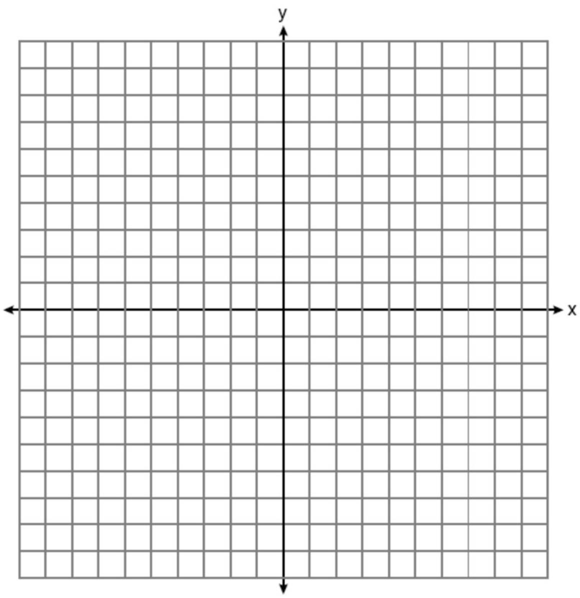
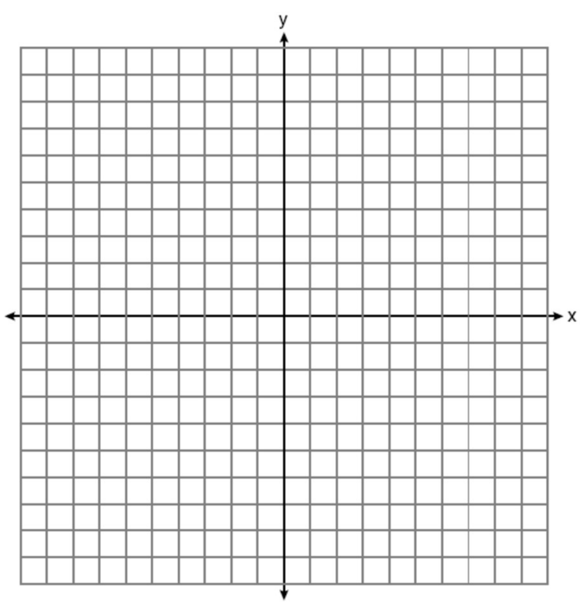
Mr. Schlansky Geometry

Point Reflections

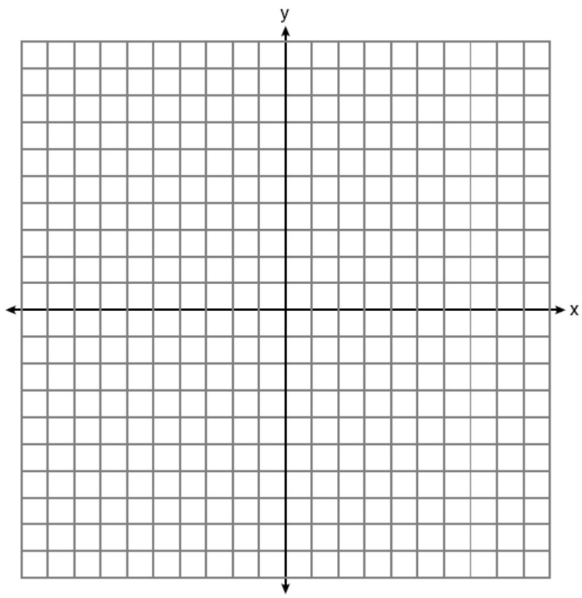
1. Triangle SUN has coordinates $S(0,6)$, $U(3,5)$, and $N(3,0)$. On the accompanying grid, draw and label $\triangle SUN$. Then, graph and state the coordinates of $\triangle S'U'N'$, the image of $\triangle SUN$ after a reflection through the origin.



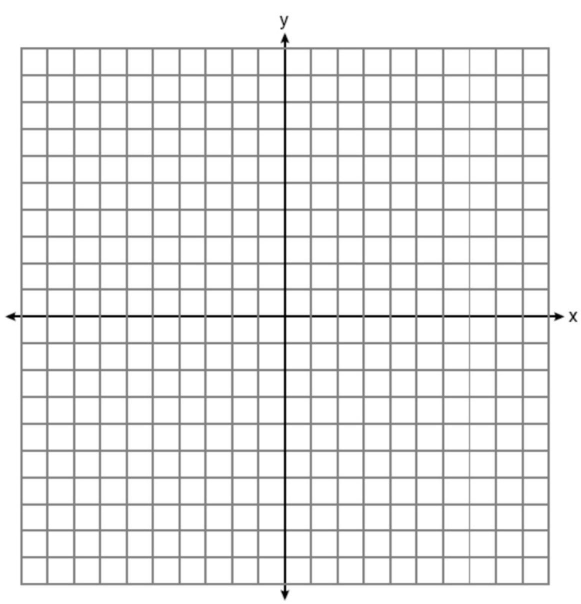
2. On the grid below, graph and label triangle ABC with vertices $A(3,1)$, $B(0,4)$, and $C(-5,3)$. On the same grid, graph and label triangle $A'B'C'$, the image of ABC after a reflection through the point (1,-2).



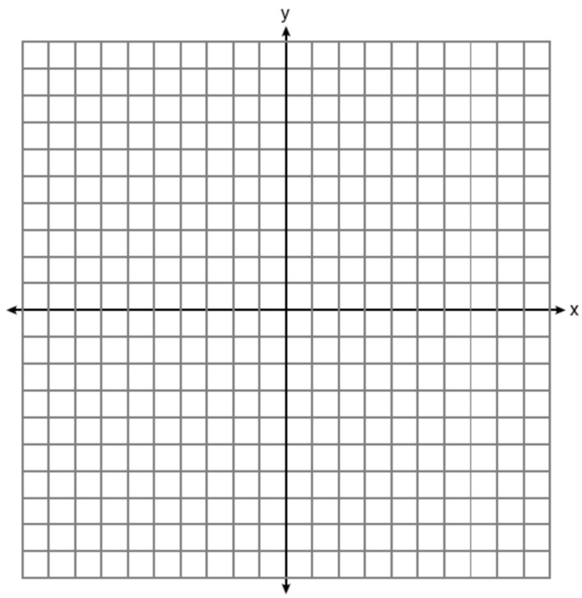
3. Triangle ABC has coordinates $A(2,1)$, $B(6,1)$, $C(5,3)$. What is the image of this triangle after a reflection through the point (-1,2). Graph both the image and the pre image.



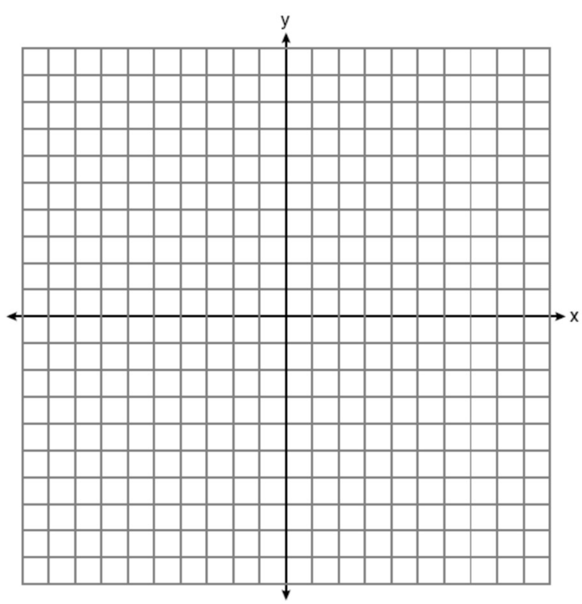
4. The coordinates of the vertices of $\triangle RST$ are $R(-2,3)$, $S(4,4)$, and $T(2,-2)$. Graph $\triangle RST$. Graph and label $\triangle R'S'T'$, the image of $\triangle RST$ after a reflection through the point (-2,-3).



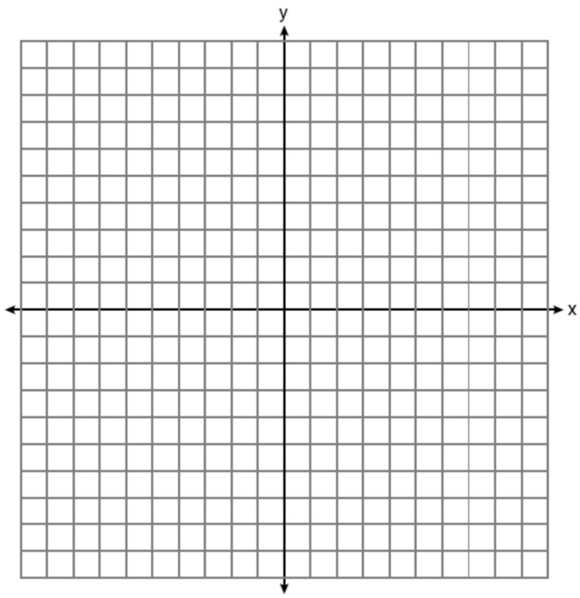
5. The coordinates of the vertices of ΔJKL are $J(8,-2)$, $K(6,1)$, and $L(-1,0)$. Graph ΔJKL. Graph and label $\Delta J'K'L'$, the image of ΔJKL after a reflection through the point (0,-2).



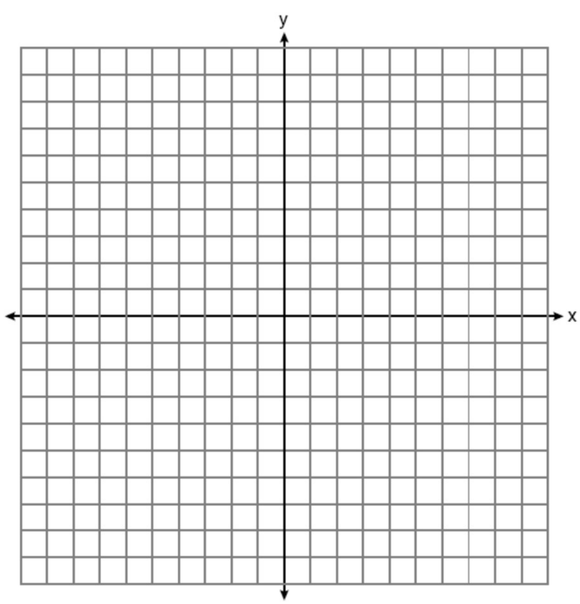
6. Triangle BIL has coordinates $B(-2,-5)$, $I(0,0)$, and $L(-5,-3)$. What is the image of this triangle after a reflection through the point (2,2)? Graph both the image and the pre image.



7. The coordinates of the vertices of ΔXYZ are $X(2,4)$, $Y(5,-2)$, and $Z(6,7)$. Graph ΔXYZ. Graph and label $\Delta X'Y'Z'$, the image of ΔXYZ after a reflection through the point (-1,1).



8. The coordinates of the vertices of ΔRAS are $R(8,-3)$, $A(2,-5)$, and $S(-1,2)$. Graph ΔRAS. Graph and label $\Delta R'A'S'$, the image of ΔRAS after a reflection through the point (0,-1).



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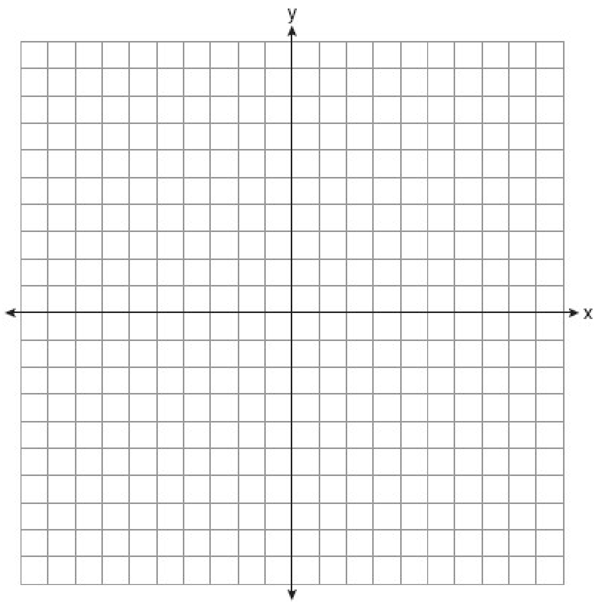
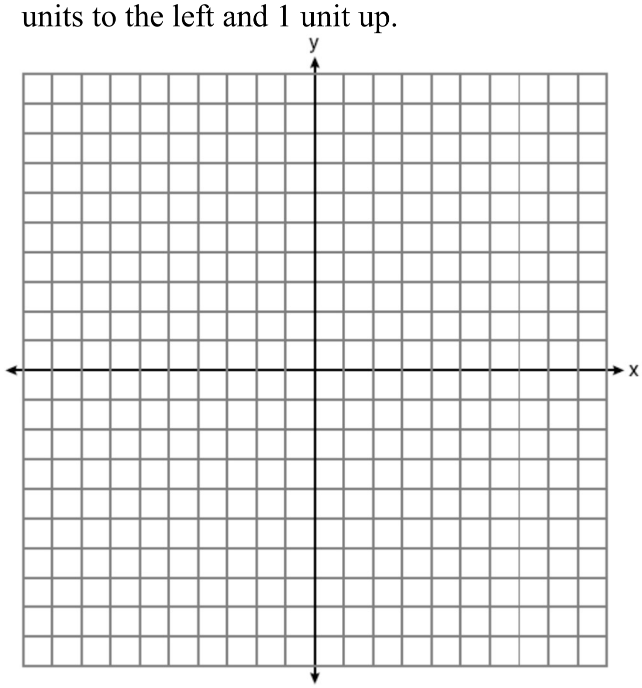
Performing Transformations Review

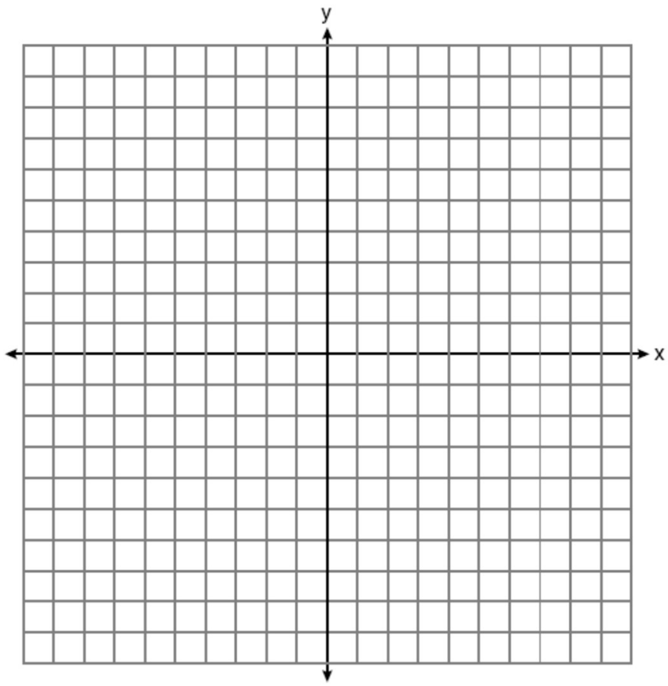
1. Triangle TAP has coordinates $T(-1,4)$, $A(2,4)$, and $P(2,0)$. On the set of axes below, graph and label $\triangle T'A'P'$, the image of $\triangle TAP$ after a reflection through the point (-2,-2).



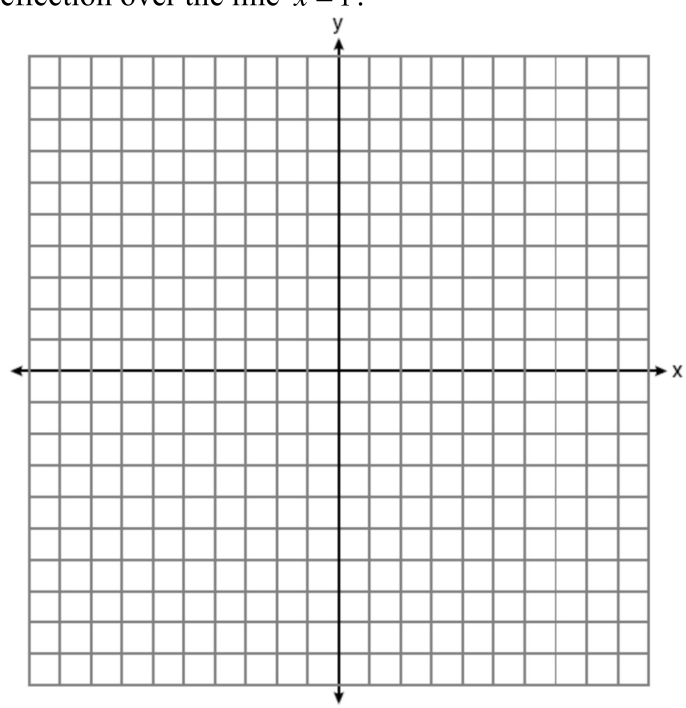
2. Graph and label the image of ΔXYZ with $X(-3,4)$, $Y(-1,1)$, and $Z(2,2)$ after a translation 3 units to the left and 1 unit up.



3. Graph and label the image of ΔLMN with vertices $L(2,-3)$, $M(5,1)$ and $N(7,3)$ after a counter-clockwise rotation 90 degrees centered at the origin.



4. Graph and label the image of triangle DEF with vertices $D(8,-2)$, $E(6,3)$, and $F(2,7)$ after a reflection over the line $x=1$.



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Mr. Schlansky

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Geometry

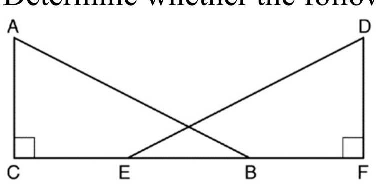
Corresponding Parts of Congruent Triangles

1. Triangle XYZ is congruent to triangle LMN. Determine whether the following statements are true or false.

a) $\overline{XY} \cong \overline{LM}$ b) $\overline{YZ} \cong \overline{LN}$ c) $\overline{ZX} \cong \overline{NL}$ d) $\overline{XZ} \cong \overline{MN}$

e) $\angle L \cong \angle Y$ f) $\angle M \cong \angle Z$ g) $\angle Z \cong \angle N$ h) $\angle M \cong \angle Y$

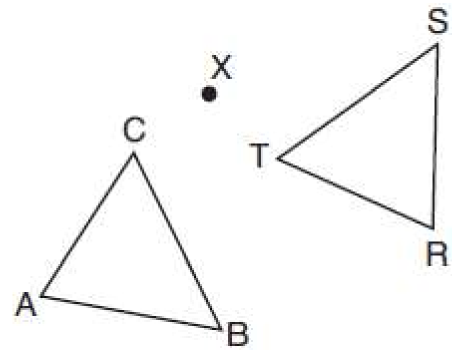
2. Right triangle DEF is the image of right triangle *ABC* after a sequence of rigid motions. Determine whether the following statements are true or false.



a) $\overline{AC} \cong \overline{EF}$ b) $\overline{AB} \cong \overline{DE}$ c) $\overline{CA} \cong \overline{FD}$ d) $\overline{BC} \cong \overline{DF}$

e) $\angle D \cong \angle B$ f) $\angle C \cong \angle F$ g) $\angle E \cong \angle B$ h) $\angle E \cong \angle C$

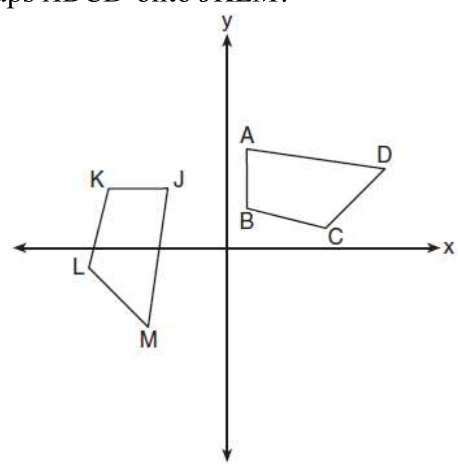
3. After a counterclockwise rotation about point X, scalene triangle ABC maps onto $\triangle RST$, as shown in the diagram below.



Which statement must be true?

1) $\angle A \cong \angle R$
2) $\angle A \cong \angle S$
3) $\overline{CB} \cong \overline{TR}$
4) $\overline{CA} \cong \overline{TS}$

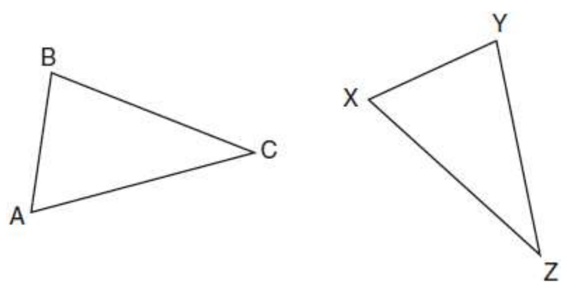
4. In the diagram below, a sequence of rigid motions maps $ABCD$ onto $JKLM$.



Which of the following statements must be true?

1) $\angle L \cong \angle B$
2) $\angle A \cong \angle J$
3) $\overline{JK} \cong \overline{AC}$
4) $\overline{JM} \cong \overline{AB}$

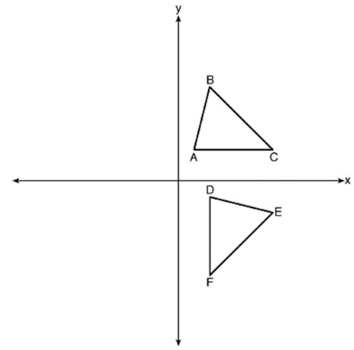
5. In the diagram below of $\triangle ABC$ and $\triangle XYZ$, a sequence of rigid motions maps $\angle A$ onto $\angle X$, $\angle C$ onto $\angle Z$, and $\overline{AC}$ onto $\overline{XZ}$.



Determine and state whether $\overline{BC} \cong \overline{YZ}$. Explain why.

Determine and state whether $\angle A \cong \angle Y$. Explain why.

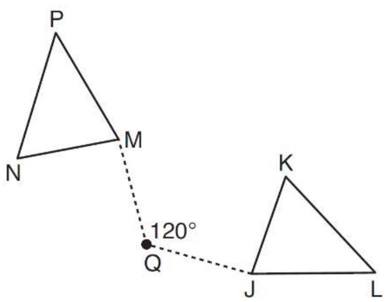
6. The image of ΔABC after a rotation of 90º clockwise about the origin is ΔDEF, as shown below.



Which statement is true?

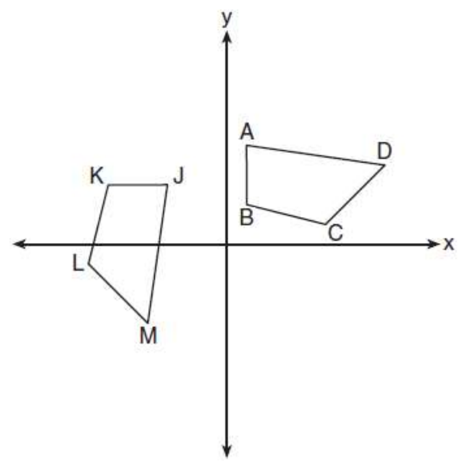
1) $\overline{BC} \cong \overline{DE}$
2) $\overline{AB} \cong \overline{DF}$
3) $\angle C \cong \angle E$
4) $\angle A \cong \angle D$

7. Triangle *MNP* is the image of triangle *JKL* after a 120° counterclockwise rotation about point *Q*. If the measure of angle *L* is 47° and the measure of angle *N* is 57°, determine the measure of angle *M*. Explain how you arrived at your answer.

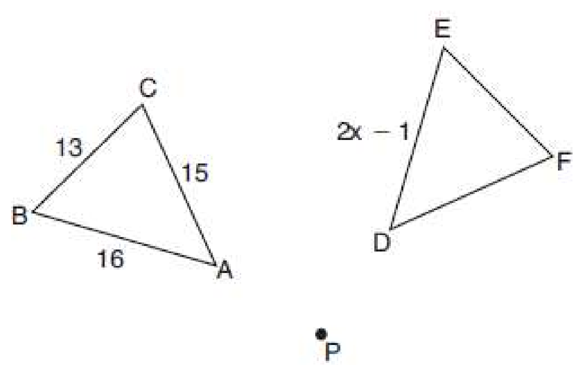


8. In the diagram below, a sequence of rigid motions maps *ABCD* onto *JKLM*.
If $m\angle A = 82°$, $m\angle B = 104°$, and $m\angle L = 121°$, the measure of $\angle M$ is

1) 53°
2) 82°
3) 104°
4) 121°



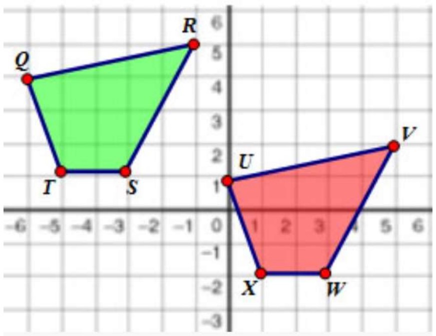
9. In the diagram below, $\triangle ABC$ with sides 13, 15, and 16, is mapped onto $\triangle DEF$ after a clockwise rotation of 90° about point *P*.
If $DE = 2x - 1$, what is the value of x?



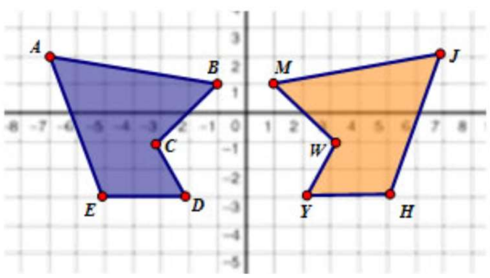
Name ________________ Date ______
Mr. Schlansky Geometry

Identifying and Proving Rigid Motions

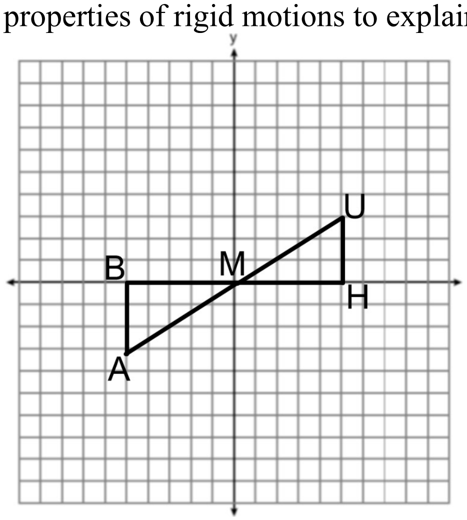
1. Identify the rigid motion that maps QRST onto UVWX. Is QRST congruent to UVWX? Use the properties of rigid motions to explain your answer.



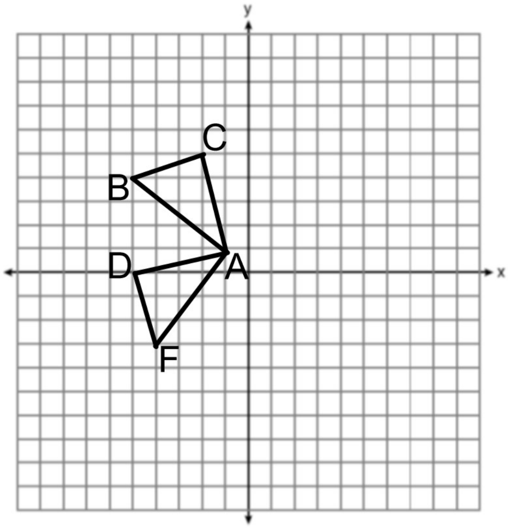
2. Identify the rigid motion that maps ABCDE onto JMWYH. Is ABCDE congruent to JMWYH? Use the properties of rigid motions to explain your answer.



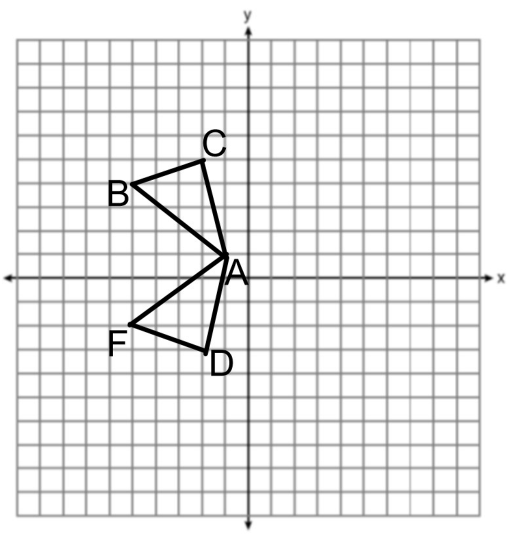
3. Identify the rigid motion that maps BAM onto HUM. Is BAM congruent to HUM? Use the properties of rigid motions to explain your answer.



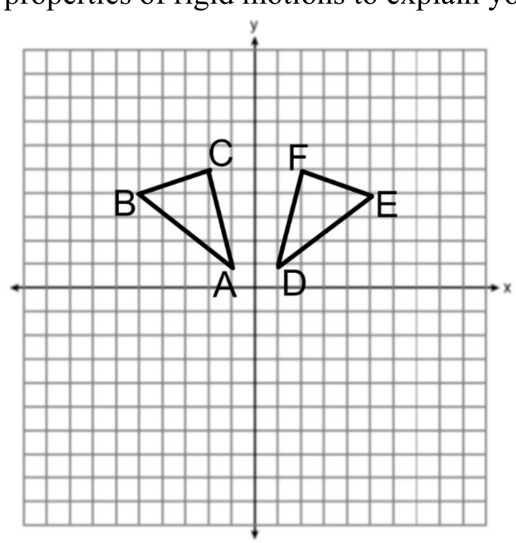
4. Identify the rigid motion that maps ABC onto AFD. Is ABC congruent to AFD? Use the properties of rigid motions to explain your answer.



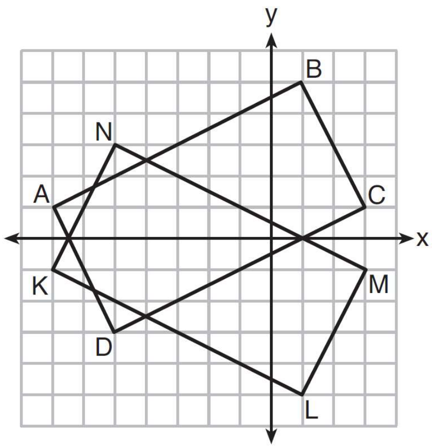
5. Identify the rigid motion that maps ABC onto AFD. Is ABC congruent to AFD? Use the properties of rigid motions to explain your answer.



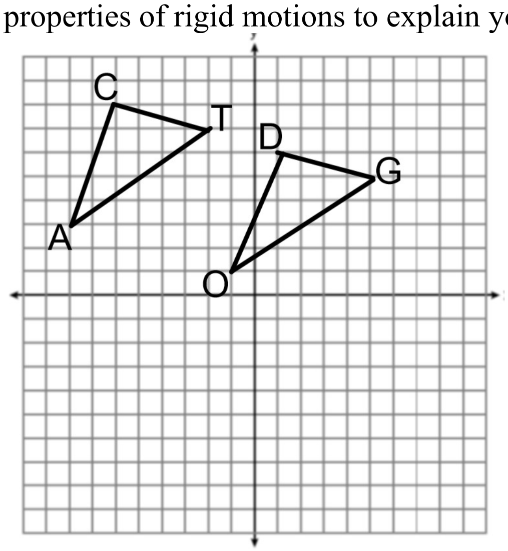
6. Identify the rigid motion that maps ABC onto DEF. Is ABC congruent to DEF? Use the properties of rigid motions to explain your answer.



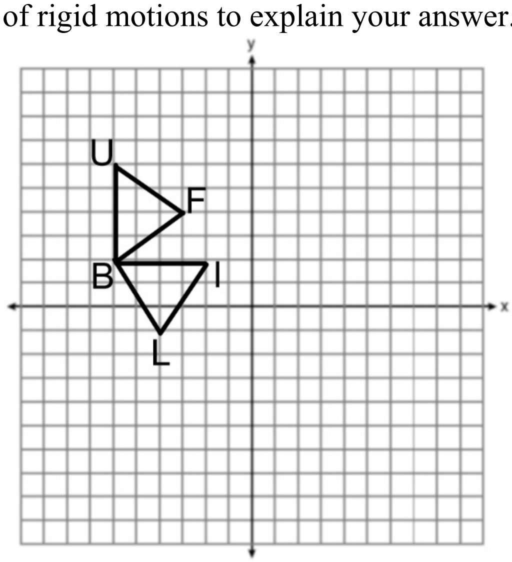
7. On the set of axes below, rectangle *ABCD* and rectangle *KLMN* are graphed. Identify the rigid motion that maps ABCD onto KLMN. Is ABCD congruent to KLMN? Use the properties of rigid motions to explain your answer.



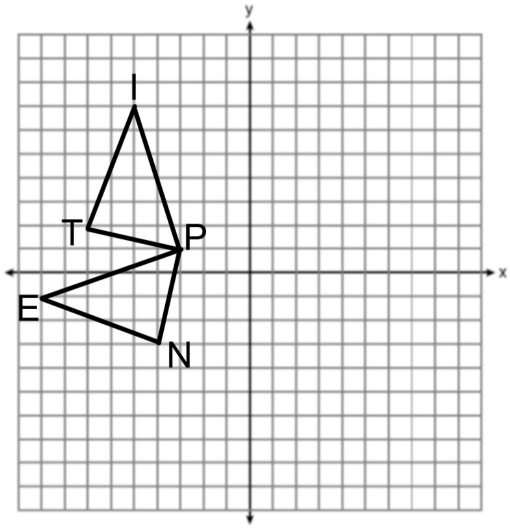
8. Identify the rigid motion that maps CAT onto DOG. Is CAT congruent to DOG? Use the properties of rigid motions to explain your answer.



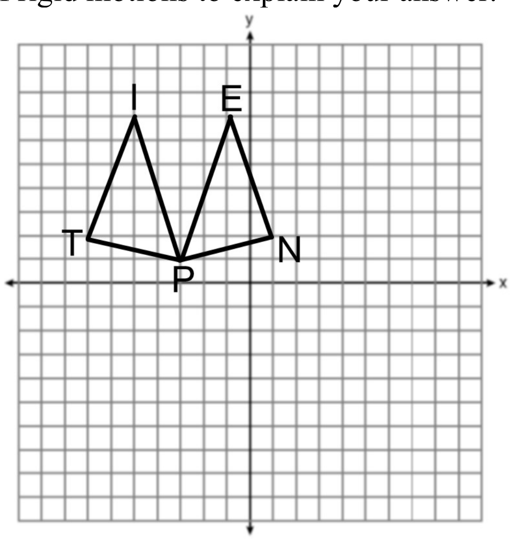
9. Identify the rigid motion that maps BUF onto BIL. Is BUF congruent to BIL? Use the properties of rigid motions to explain your answer.



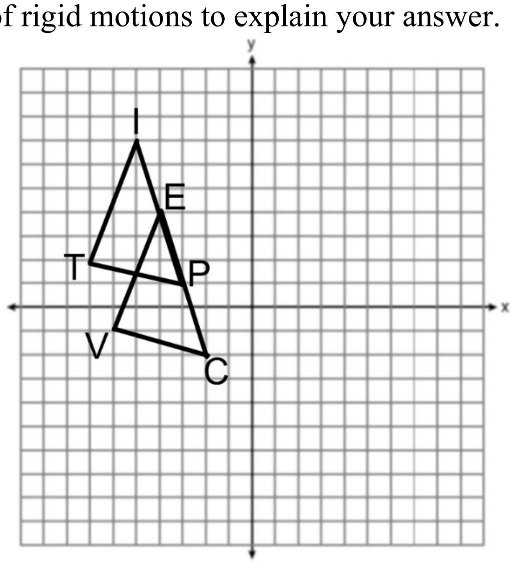
10. Identify the rigid motion that maps PIT onto PEN. Is PIT congruent to PEN? Use the properties of rigid motions to explain your answer.



11. Identify the rigid motion that maps PIT onto PEN. Is PIT congruent to PEN? Use the properties of rigid motions to explain your answer.



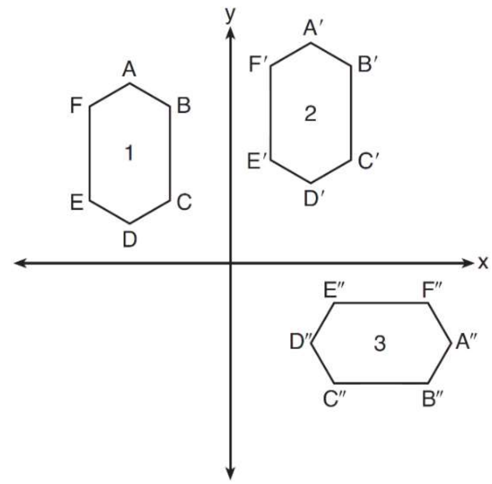
12. Identify the rigid motion that maps VEC onto TIP. Is VEC congruent to TIP? Use the properties of rigid motions to explain your answer.



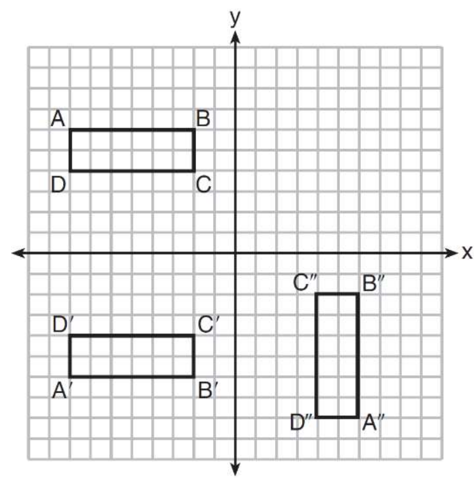
Name____________________ Date____________
Mr. Schlansky Geometry

Identifying Sequences of Rigid Motions Multiple Choice

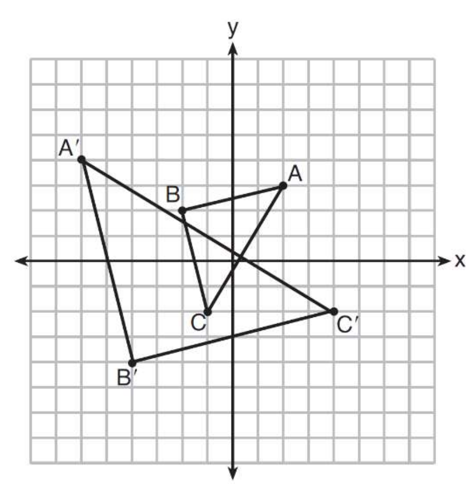
1. In the diagram below, congruent figures 1, 2, and 3 are drawn.
Which sequence of transformations maps figure 1 onto figure 2 and then figure 2 onto figure 3?
1) a line reflection followed by a translation
2) a point reflection followed by a translation
3) a translation followed by a reflection
4) a translation followed by a rotation



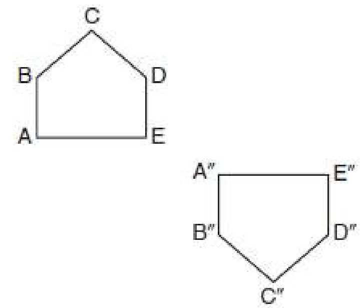
2. A sequence of transformations maps rectangle *ABCD* onto rectangle *A"B"C"D"*, as shown in the diagram below.
Which sequence of transformations maps *ABCD* onto *A'B'C'D'* and then maps *A'B'C'D'* onto *A"B"C"D"*?
1) a line reflection followed by a rotation
2) a line reflection followed by a translation
3) a translation followed by a rotation
4) a translation followed by a line reflection



3. Which sequence of transformations will map $\triangle ABC$ onto $\triangle A'B'C'$?
1) line reflection and translation
2) point reflection and line reflection
3) translation and dilation
4) dilation and rotation

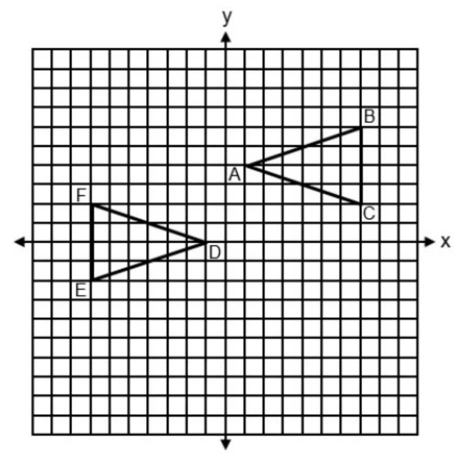


4. Identify which sequence of transformations could map pentagon *ABCDE* onto pentagon *A"B"C"D"E"*, as shown below.



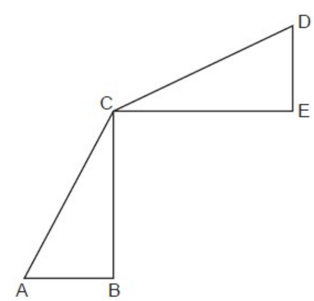
1) dilation followed by a rotation
2) translation followed by a rotation
3) line reflection followed by a translation
4) line reflection followed by a line reflection

5. Triangles ABC and DEF are graphed on the set of axes below.
Which sequence of rigid motions maps ΔABC onto ΔDEF ?



1) A reflection over $y = -x + 2$
2) A point reflection through (0,2)
3) A translation 2 units left followed by a reflection over the x-axis
4) A translation 4 units down folowed by a reflection over the y-axis

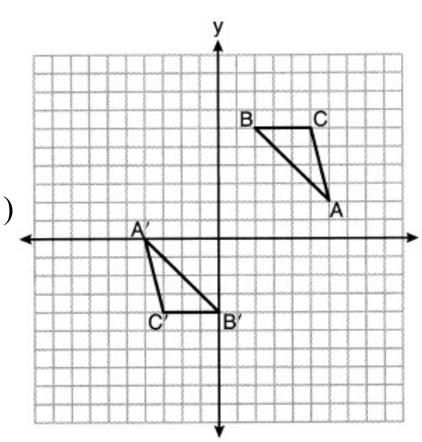
6. In the diagram below, $\triangle ABC \cong \triangle DEC$.



Which transformation will map $\triangle ABC$ onto $\triangle DEC$?

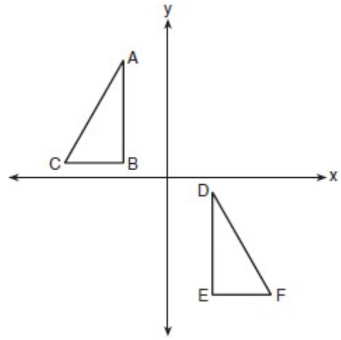
1) a rotation
2) a line reflection
3) a translation followed by a dilation
4) a line reflection followed by a second line reflection

7. On the set of axes below, $\triangle ABC \cong \triangle A'B'C'$.
Triangle *ABC* maps onto $\triangle A'B'C'$ after a



1) reflection over the line $y = -x$
2) reflection over the line $y = -x + 2$
3) point reflection through (1,1)
4) rotation of 180° centered at the origin

8. In the diagram below, $\triangle ABC \cong \triangle DEF$.

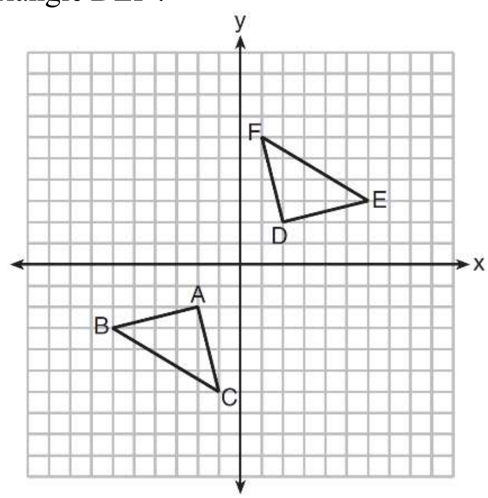


Which sequence of transformations maps $\triangle ABC$ onto $\triangle DEF$?

1) a reflection over the x-axis followed by a translation
2) a reflection over the y-axis followed by a translation
3) a rotation of 180° about the origin followed by a translation
4) a counterclockwise rotation of 90° about the origin followed by a translation

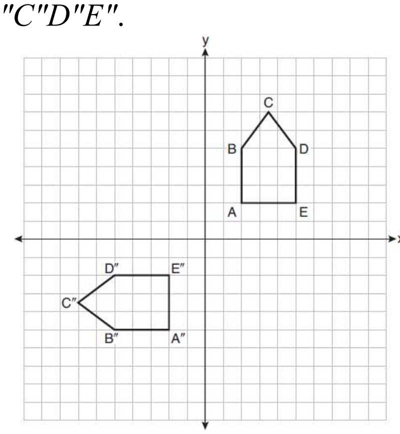
9. Triangle *ABC* and triangle *DEF* are graphed on the set of axes below.
Which sequence of transformations maps triangle *ABC* onto triangle *DEF*?

1) a reflection over the x-axis followed by a reflection over the y-axis
2) a point reflection through 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



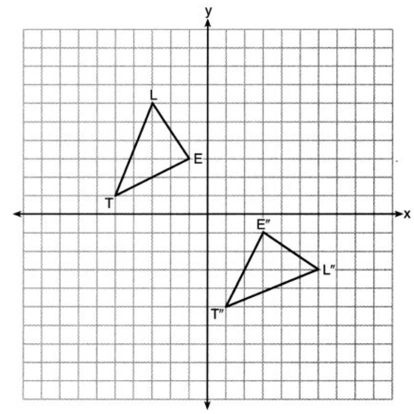
10. On the set of axes below, pentagon *ABCDE* is congruent to *A"B"C"D"E"*.
Which describes a sequence of rigid motions that maps *ABCDE* onto *A"B"C"D"E"*?

1) a rotation of 90° counterclockwise about the origin followed by a reflection over the x-axis
2) a rotation of 90° counterclockwise about the origin followed by a translation down 7 units
3) a reflection over the y-axis followed by a reflection over the x-axis
4) a reflection over the x-axis followed by a rotation of 90° counterclockwise about the origin



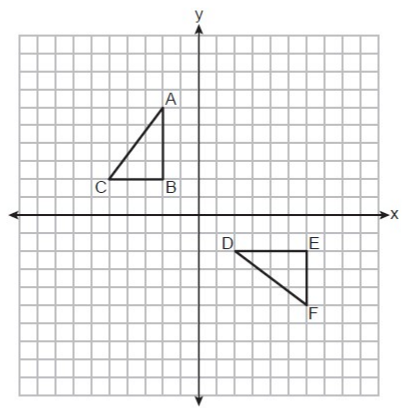
11. On the set of axes below, $\triangle LET$ and $\triangle L''E''T''$ are graphed in the coordinate plane where $\triangle LET \cong \triangle L''E''T''$.

Which sequence of rigid motions maps $\triangle LET$ onto $\triangle L''E''T''$?



1) a reflection over the *y*-axis followed by a reflection over the *x*-axis
2) a rotation of 180° about the origin
3) a rotation of 90° counterclockwise about the origin followed by a reflection over the *y*-axis
4) a reflection over the *x*-axis followed by a rotation of 90° clockwise about the origin

12. On the set of axes below, congruent triangles *ABC* and *DEF* are drawn.



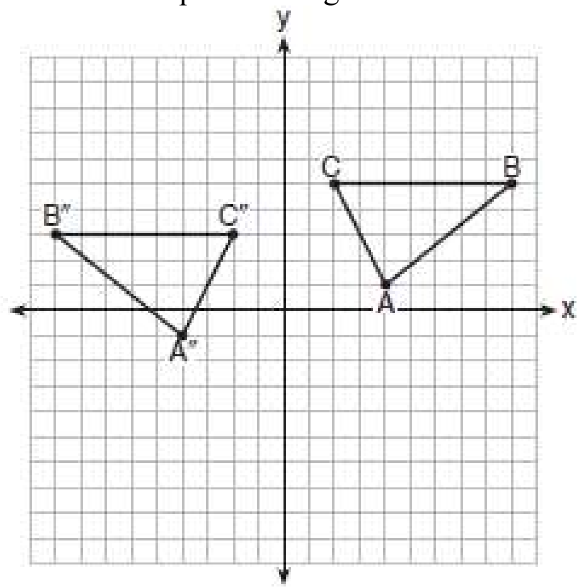
Which sequence of transformations maps $\triangle ABC$ onto $\triangle DEF$?

1) A counterclockwise rotation of 90 degrees about the origin, followed by a translation 8 units to the right.
2) A counterclockwise rotation of 90 degrees about the origin, followed by a reflection over the *y*-axis.
3) A point reflection through the origin, followed by a translation 4 units down.
4) A clockwise rotation of 90 degrees about the origin, followed by a reflection over the *x*-axis.

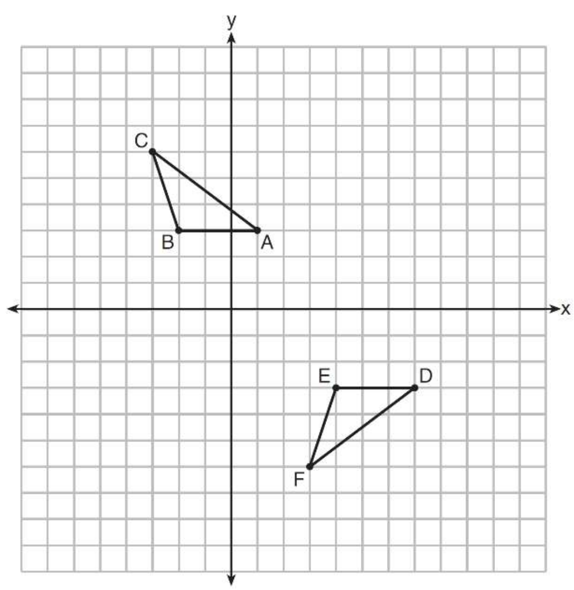
Name ________________ Date __________
Mr. Schlansky Geometry

Identifying Sequences of Rigid Motions (Open Response)

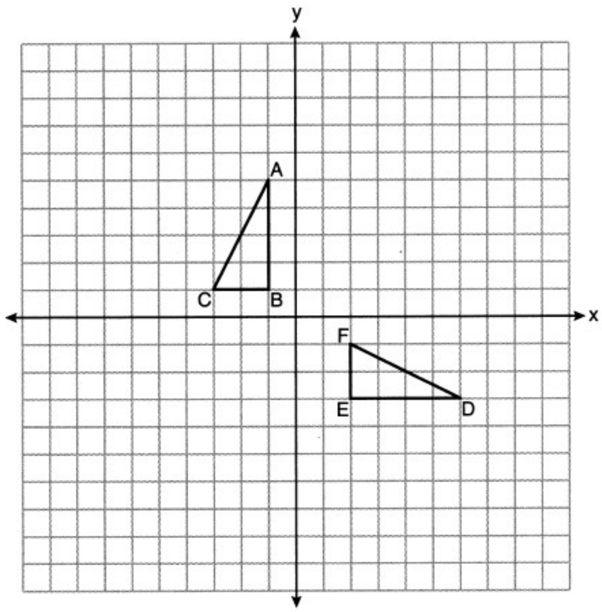
1. The graph below shows $\triangle ABC$ and its image, $\triangle A"B"C"$.
Describe a sequence of rigid motions which would map $\triangle ABC$ onto $\triangle A"B"C"$.



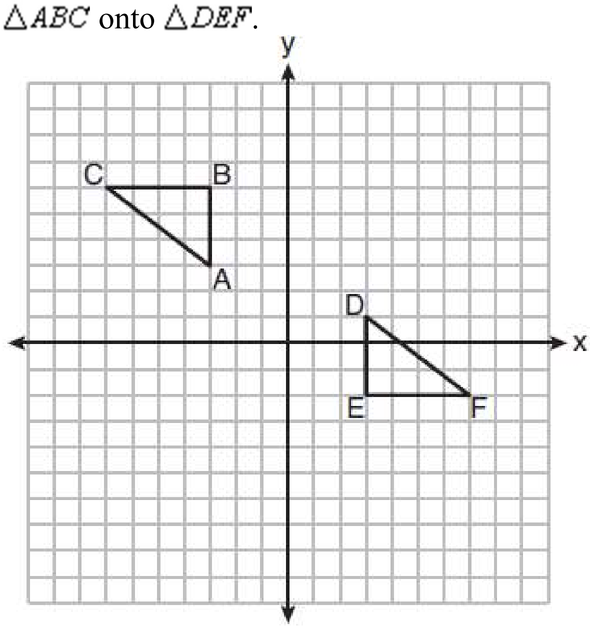
2. Describe a sequence of transformations that will map $\triangle ABC$ onto $\triangle DEF$ as shown below.



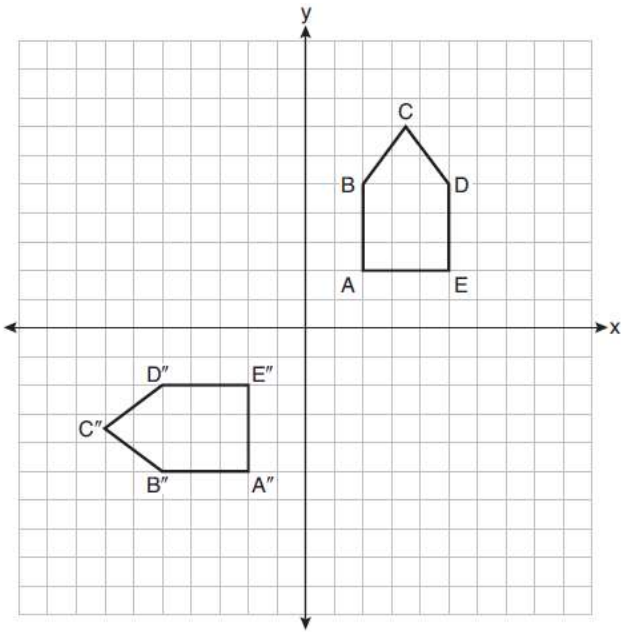
3. On the set of axes below, $\triangle ABC$ and $\triangle DEF$ are graphed. Describe a sequence of rigid motions that would map $\triangle ABC$ onto $\triangle DEF$.



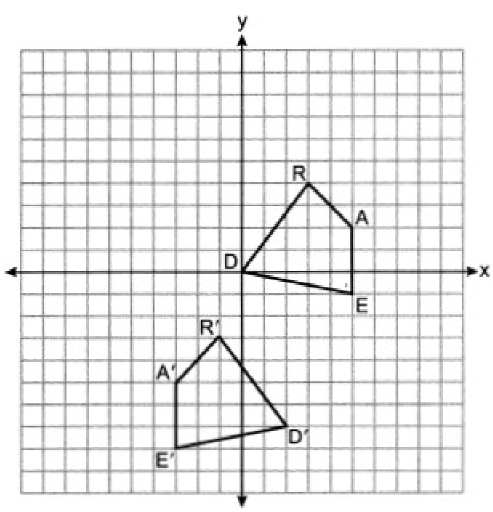
4. On the set of axes below, $\triangle ABC \cong \triangle DEF$. Describe a sequence of rigid motions that maps $\triangle ABC$ onto $\triangle DEF$.



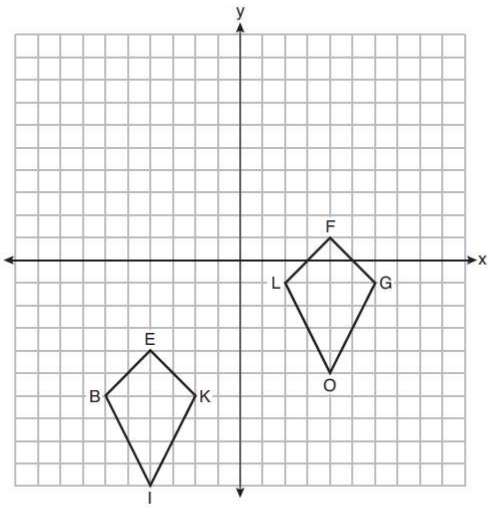
5. On the set of axes below, pentagon *ABCDE* is congruent to *A"B"C"D"E"*. Describe a sequence of rigid motions that maps pentagon *ABCDE* onto *A"B"C"D"E"*.



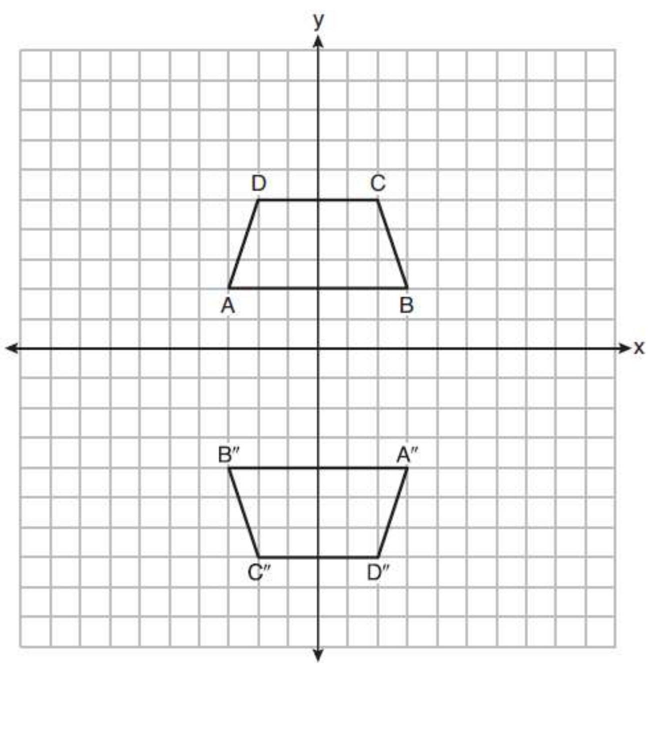
6. Quadrilateral *DEAR* and its image, quadrilateral *D'E'A'R'*, are graphed on the set of axes below. Describe a sequence of transformations that maps quadrilateral *DEAR* onto quadrilateral *D'E'A'R'*.



7. Quadrilaterals *BIKE* and *GOLF* are graphed on the set of axes below. Describe a sequence of transformations that maps quadrilateral *BIKE* onto quadrilateral *GOLF*.



8. Trapezoids *ABCD* and *A"B"C"D"* are graphed on the set of axes below. Describe a sequence of transformations that maps trapezoid *ABCD* onto trapezoid *A"B"C"D"*.

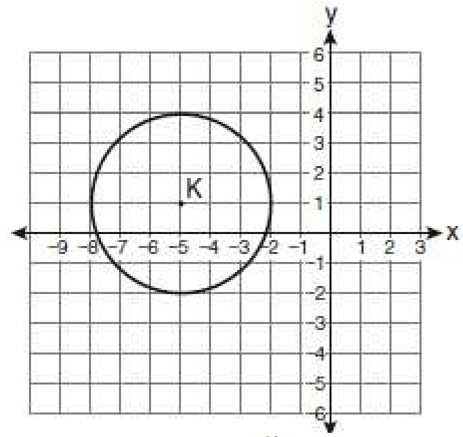


Name ______________ Date _____________

Mr. Schlansky Geometry

Mapping Shapes Onto Themselves

1. Circle *K* is shown in the graph below.
Which of the following transformations map circle K onto itself?



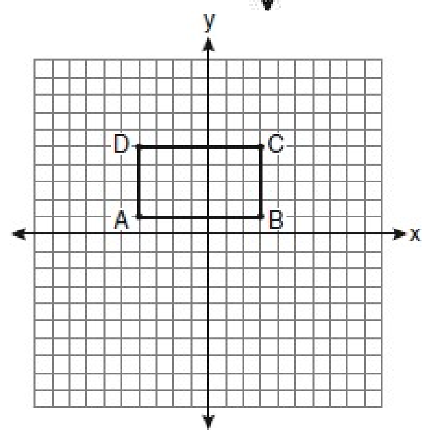
1) Reflection over the line $x-axis$

2) Reflection over the $y-axis$

3) Rotation of 90 centered at the origin

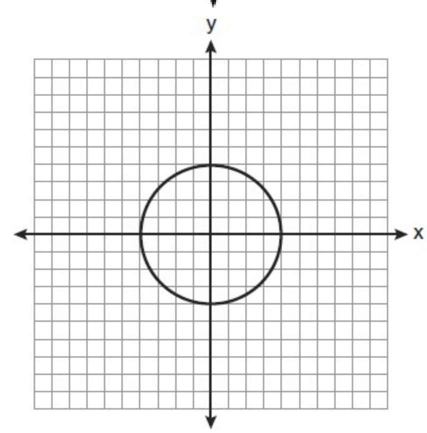
4) Rotation of 90 centered at K

2. On the set of axes below, Geoff drew rectangle *ABCD*.



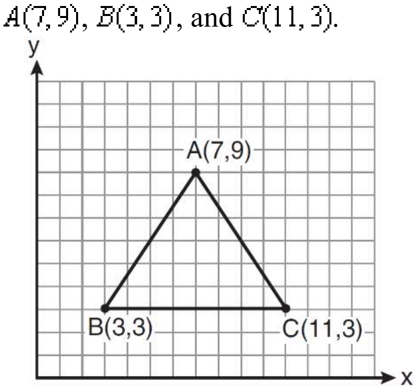
What of the following transformations would map the rectangle onto itself?
1) Reflection over the y axis
2) Reflection over the line $y = 3$
3) Rotation of 180 centered at the origin
4) Translation one unit to the right

3. In the diagram below, which transformation does *not* map the circle onto itself?

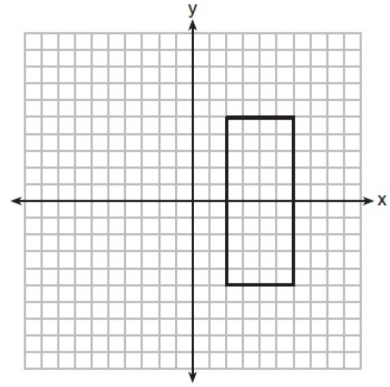


1) Rotation of 80 centered at the origin
2) Reflection over the line $y=x$
3) Rotation of 180 centered at (4,0)
4) Reflection over the line $x=0$

4. The vertices of the triangle in the diagram below are $A(7,9)$, $B(3,3)$, and $C(11,3)$.
Which transformation will map ΔABC onto itself?
1) Rotation of 60 centered at (3,3)
2) Reflection over the line $y = 5$
3) Reflection over the line $x = 7$
4) Translation 3 units up

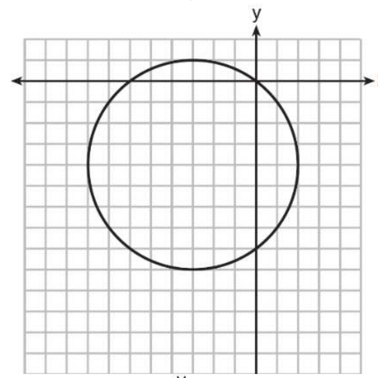


5. As shown in the graph below, the quadrilateral is a rectangle. Which transformation would *not* map the rectangle onto itself?
1) a reflection over the x-axis
2) a reflection over the line $x = 4$
3) a rotation of 180° about the origin
4) a rotation of 180° about the point $(4, 0)$



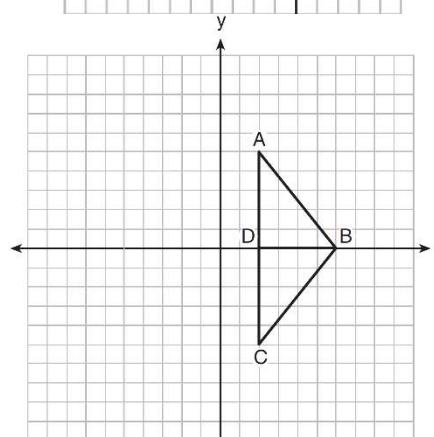
6. Which transformation does not map the circle in the diagram below onto itself?

1) Rotation of 90 centered at the origin
2) Reflection over the line $x = -3$
3) Rotation of 90 centered at $(-3, -4)$
4) Reflection over the line $y = -4$



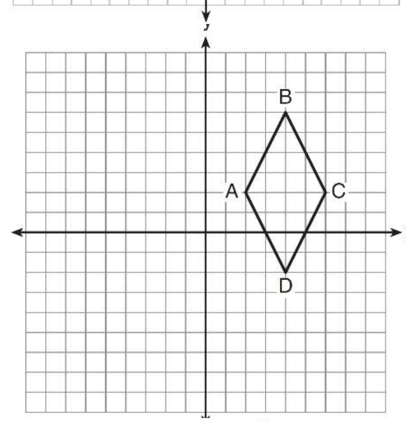
7. In the diagram below, quadrilateral ABCD is graphed.

Which transformation will map ABCD onto itself?
1) Reflection over the y-axis
2) Rotation of 180 centered at the origin
3) Reflection over the line $y = 0$
4) Rotation of 180 centered at (4,0)

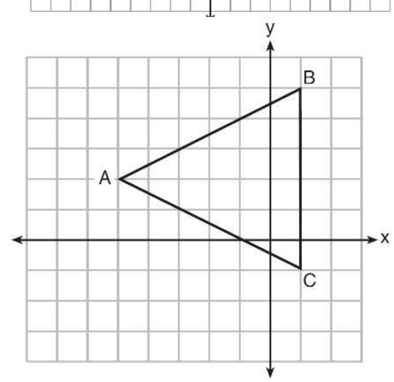


8. Quadrilateral *ABCD* is graphed on the set of axes below.

Which transformation maps quadrilateral ABCD onto itself?
1) Reflection over the x-axis
2) Reflection over the y-axis
3) Reflection over $x = 2$
4) Reflection over $y = 2$



9. Triangle *ABC* is graphed on the set of axes below.
Which transformation maps $\triangle ABC$ onto itself?
1) Reflection over the x-axis
2) Reflection over $x = 2$
3) Reflection over $y = 2$
4) Reflection over $x = -2$



Name _____________ Date ________
Mr. Schlansky Geometry

Regular Polygon Rotations

1. What is the minimum number of degrees a regular decagon must be rotated to be mapped onto itself?

2. What is the minimum number of degrees a regular hexagon must be rotated to be carried onto itself?

3. If a regular pentagon is rotated clockwise around its center, the minimum number of degrees it must be rotated to map onto itself is

1) 54°
2) 72°
3) 108°
4) 360°

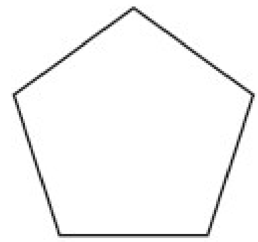
4. Which regular polygon has a minimum rotation of 45° to carry the polygon onto itself?

1) octagon 3) hexagon
2) nonagon 4) pentagon

5. Which regular polygon has a minimum rotation of 40° to carry the polygon onto itself?

1) nonagon 3) hexagon
2) decagon 4) pentagon

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



1) 60°
2) 108°
3) 216°
4) 540°

7. Which rotation would map a regular hexagon onto itself?

1) 45º 3) 240º
2) 150º 4) 315º

8. Which rotation about its center will carry a regular decagon onto itself?

1) 54°
2) 162°
3) 198°
4) 252°

9. Which rotation about its center will carry a regular octagon onto itself?

1) 80°
2) 315°
3) 280°
4) 120°

10. Which of the following rotations would not map a regular pentagon onto itself?

1) 144 3) 216
2) 120 4) 720

11. Which of the following rotations would not map an equilateral triangle onto itself?

1) 120º 3) 180º
2) 240º 4) 480º

12. Which figure will *not* carry onto itself after a 120-degree rotation about its center?

1) equilateral triangle 3) regular octagon
2) regular hexagon 4) regular nonagon

Name _______________ Date _______
Mr. Schlansky Geometry

Transformations Review Sheet

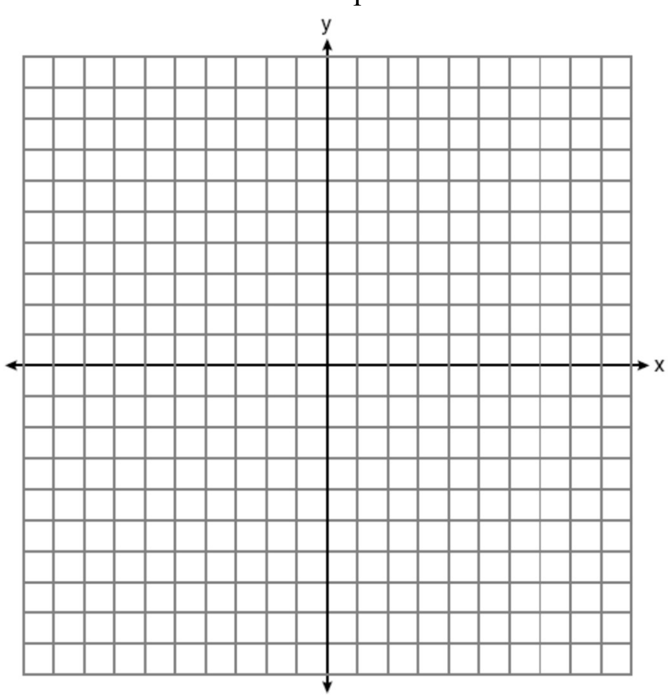
1. If $\triangle A'B'C'$ is the image of $\triangle ABC$, under which transformation will the triangles *not* be congruent?

1) reflection over the *x*-axis
2) translation to the left 5 and down 4
3) dilation centered at the origin with scale factor 2
4) rotation of 270° counterclockwise about the origin

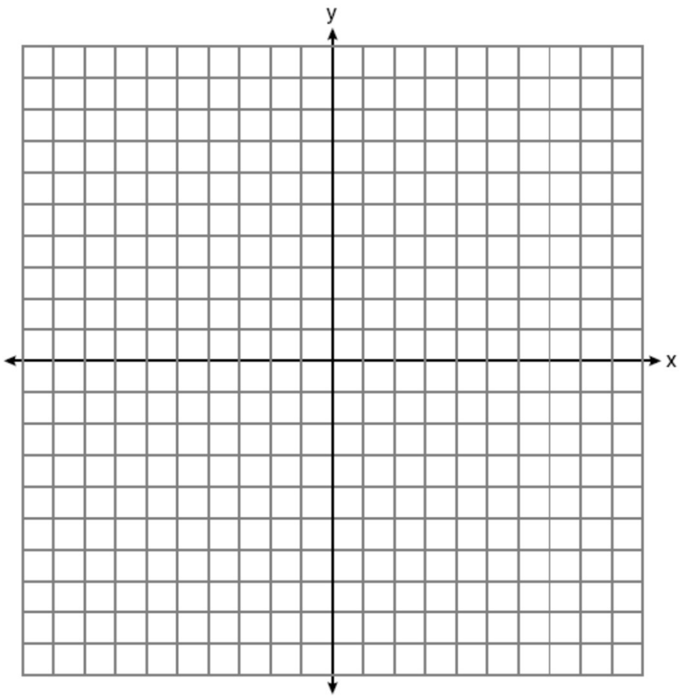
2. Under which transformation would $\triangle A'B'C'$, the image of $\triangle ABC$, *not* be congruent to $\triangle ABC$?

1) reflection through the point (2,-1)
2) rotation of 90° clockwise about the origin
3) translation of 3 units right and 2 units down
4) dilation with a scale factor of 2 centered at the origin

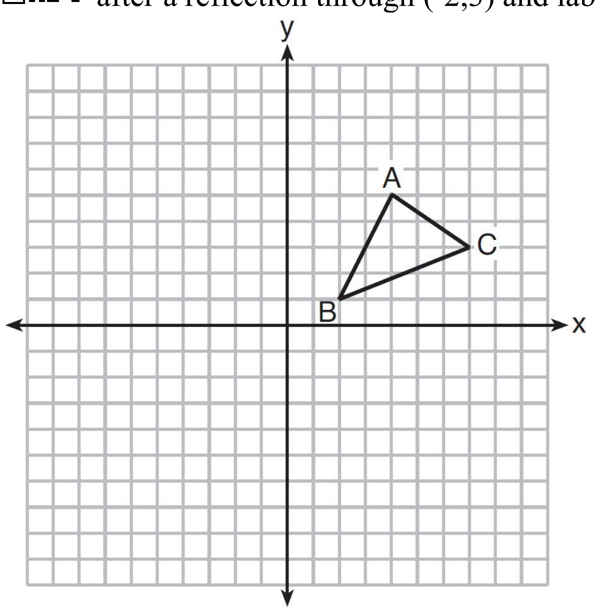
3. What is the image of ΔLMN with vertices $L(2,-3)$, $M(5,1)$ and $N(7,3)$ after a translation 2 units to the left and 4 units up?



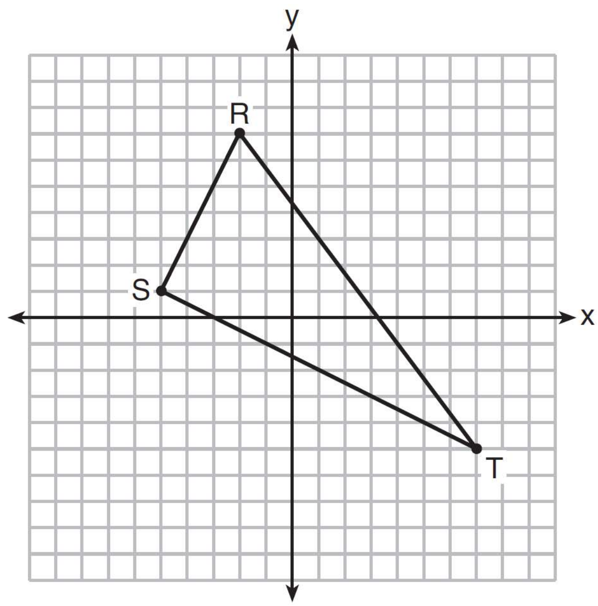
4. Graph the image of quadrilateral ADEF with vertices $A(4,-1)$, $D(8,-2)$, $E(6,3)$, and $F(2,7)$ after a translation 5 units to the left?



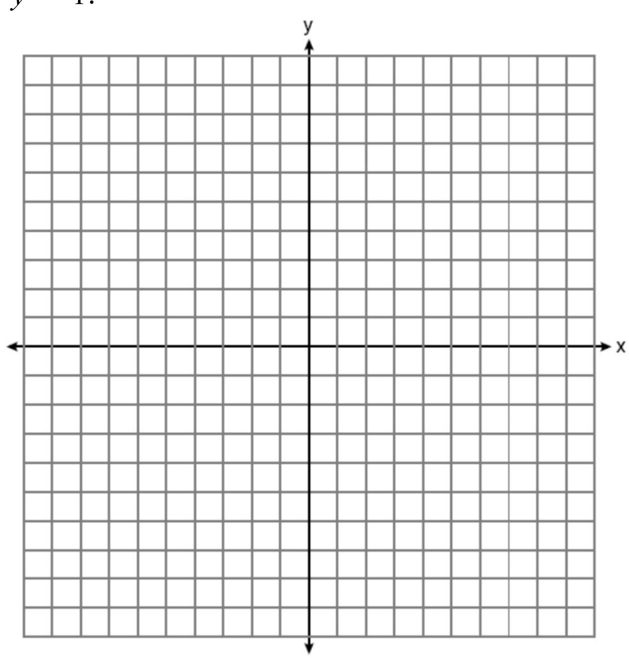
5. In the diagram below, $\triangle ABC$ is graphed. Graph and state the coordinates of the image of $\triangle ABC$ after a reflection through (-2,3) and label it $\Delta A'B'C'$.



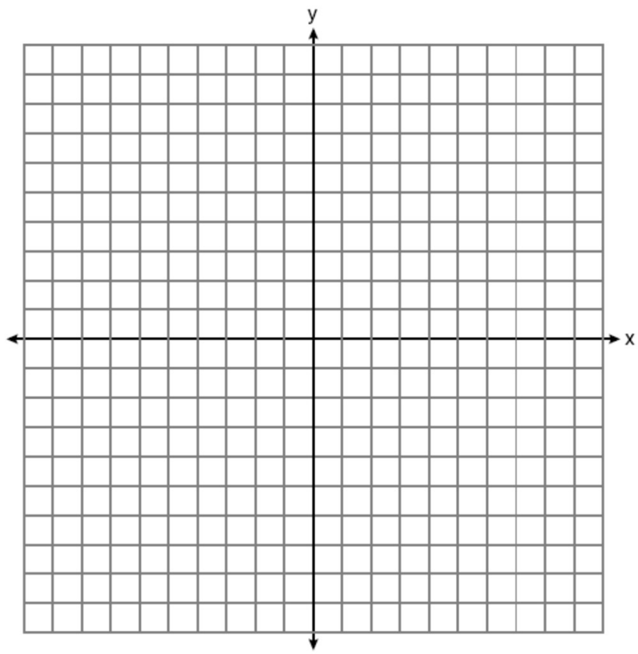
6. Triangle RST is graphed on the set of axes below. Graph the image of ΔRST after a point reflection through (0,2) and label it $\Delta R'S'T'$.



7. On the grid below, graph and label triangle ABC with vertices $A(3,1)$, $B(0,4)$, and $C(-5,3)$. On the same grid, graph and label triangle $A'B'C'$, the image of ABC after a reflection over $y = -1$.



8. Triangle ABC has coordinates $A(2,1)$, $B(6,1)$, $C(5,3)$. What is the image of this triangle after a reflection over the line $x=4$. Graph both the image and the pre image.



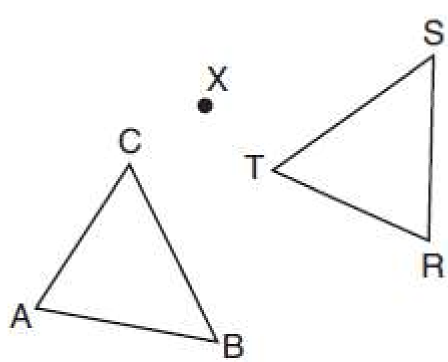
9. Triangle $A'B'C'$ is the image of triangle ABC after a translation of 2 units to the right and 3 units up. Is triangle ABC congruent to triangle $A'B'C'$? Explain why.

10. After a reflection over a line, $\Delta A'B'C'$ is the image of ΔABC. Explain why triangle ABC is congruent to triangle $\Delta A'B'C'$.

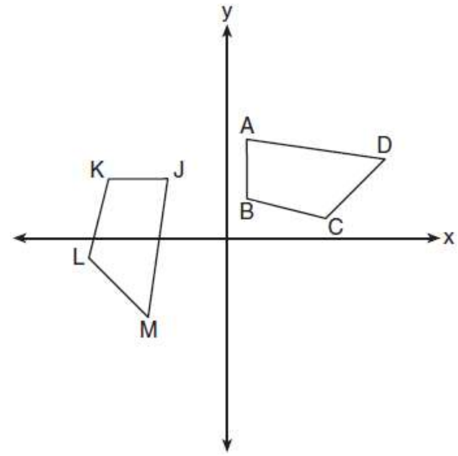
11. After a counterclockwise rotation about point X, scalene triangle ABC maps onto $\triangle RST$, as shown in the diagram below.

Which statement must be true?

1) $\angle A \cong \angle R$
2) $\angle A \cong \angle S$
3) $\overline{CB} \cong \overline{TR}$
4) $\overline{CA} \cong \overline{TS}$



12. In the diagram below, a sequence of rigid motions maps *ABCD* onto *JKLM*.



Which of the following statements must be true?

3) $\angle L \cong \angle B$ 3) $\overline{JK} \cong \overline{AC}$

4) $\angle A \cong \angle J$ 4) $\overline{JM} \cong \overline{AB}$

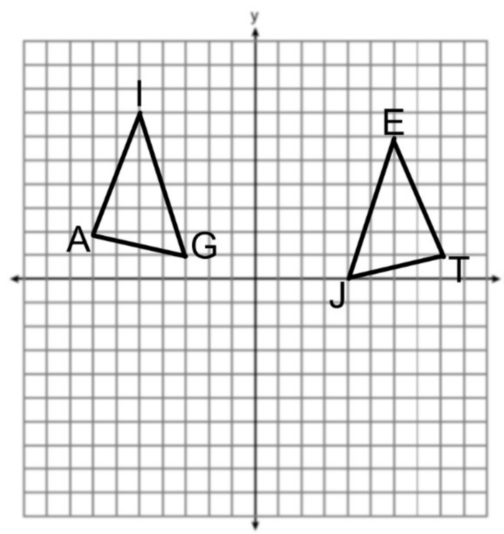
13. Which of the following sequences of rigid motions would map ΔGIA onto ΔJET?

1) point reflection through (0.5,0.5) followed by a translation 11 right and 1 down

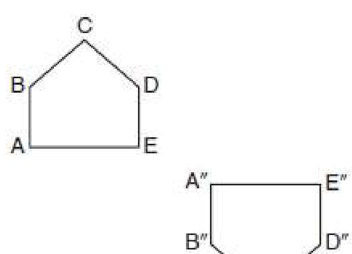
2) reflection over the y-axis followed by a translation right 1 and down 1

3) rotation of 90 degrees clockwise centered at the origin followed by a translation right 1 and up 1

4) reflection over $x = 1$ followed by a reflection over the x-axis

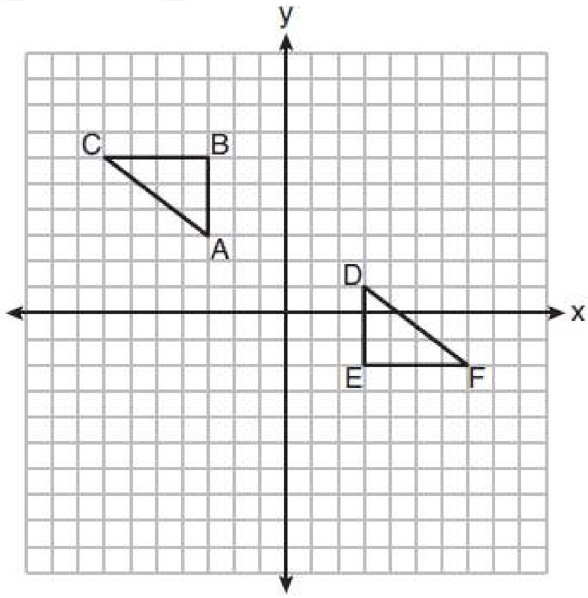


14. Identify which sequence of transformations could map pentagon *ABCDE* onto pentagon *A"B"C"D"E"*, as shown below.

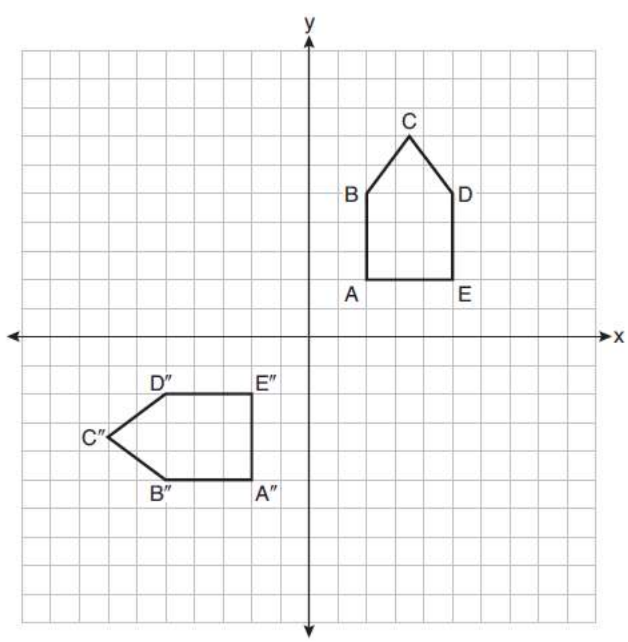


1) dilation followed by a rotation
2) translation followed by a rotation
3) line reflection followed by a translation
4) line reflection followed by a line reflection

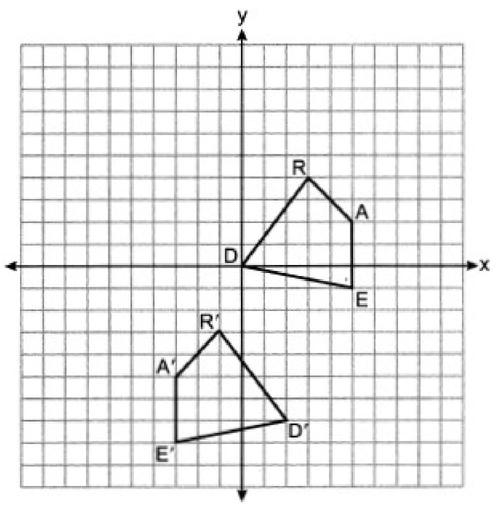
15. On the set of axes below, $\triangle ABC \cong \triangle DEF$. Describe a sequence of rigid motions that maps $\triangle ABC$ onto $\triangle DEF$.



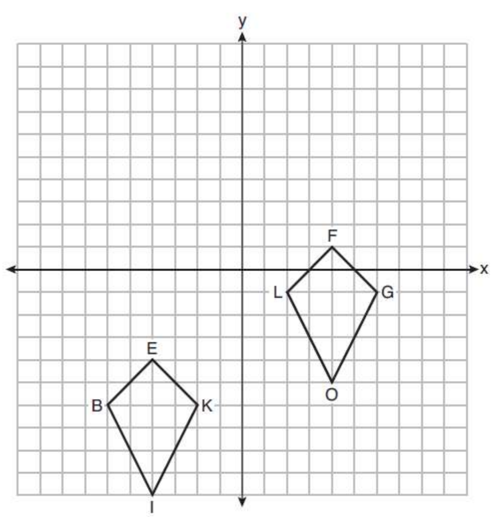
16. On the set of axes below, pentagon *ABCDE* is congruent to *A"B"C"D"E"*. Describe a sequence of rigid motions that maps pentagon *ABCDE* onto *A"B"C"D"E"*.



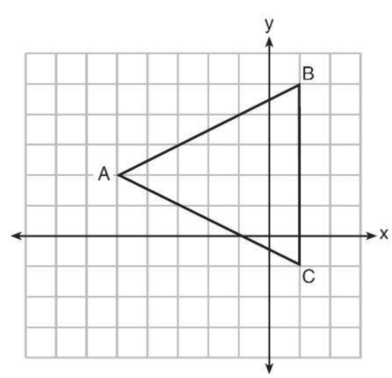
17. Quadrilateral *DEAR* and its image, quadrilateral *D'E'A'R'*, are graphed on the set of axes below. Describe a sequence of transformations that maps quadrilateral *DEAR* onto quadrilateral *D'E'A'R'*.



18. Quadrilaterals *BIKE* and *GOLF* are graphed on the set of axes below. Describe a sequence of transformations that maps quadrilateral *BIKE* onto quadrilateral *GOLF*.



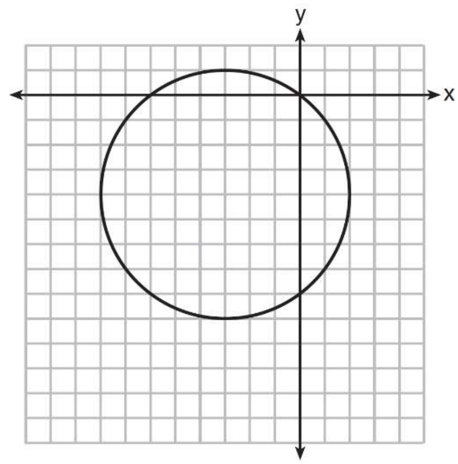
19. Triangle *ABC* is graphed on the set of axes below.



Which transformation maps $\triangle ABC$ onto itself?
1) Reflection over the x-axis
2) Reflection over $x = 2$
3) Reflection over $y = 2$
4) Reflection over $x = -2$

20. Which transformation does not map the circle in the diagram below onto itself?

1) Rotation of 90 centered at the origin
2) Reflection over the line $x = -3$
3) Rotation of 90 centered at $(-3, -4)$
4) Reflection over the line $y = -4$



21. A regular octagon is rotated *n* degrees about its center, carrying the octagon onto itself. The value of *n* could be

1) 10°
2) 150°
3) 225°
4) 252°

22. Which of the following rotations would not map a regular pentagon onto itself?

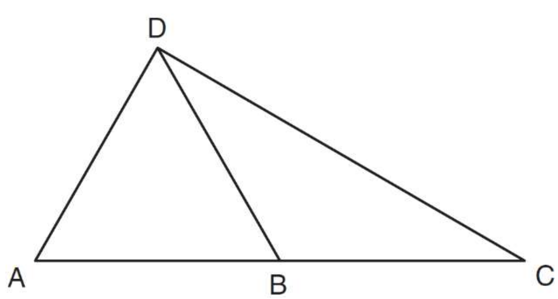
(1) 144
(2) 120
(3) 216
(4) 720

Spiral Review

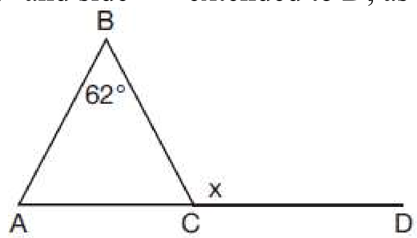
Complex Triangle Problems:

1) The three angles of a triangle add to equal 180º. Look for triangles.
2) Linear pairs add to 180º. Look for linear pairs.
3) Isosceles triangle has congruent angles opposite congruent sides (given congruent sides).
4) Equilateral triangle has angles 60, 60, 60 (given equilateral triangle).
5) An angle bisector cuts an angle into two congruent halves (given bisected angles).
6) Use parallel lines cut by a transversal (extend and follow the transversal, fill in 8 angles.)

23. In the diagram below of $\triangle ACD$, B is a point on $\overline{AC}$ such that $\triangle ADB$ is an equilateral triangle, and $\triangle DBC$ is an isosceles triangle with $\overline{DB} \cong \overline{BC}$. Find $m\angle C$.



24. Given $\triangle ABC$ with $m\angle B = 62°$ and side $\overline{AC}$ extended to D, as shown below.



Which value of x makes $\overline{AB} \cong \overline{CB}$?

1) 59º
2) 62º
3) 118º
4) 121º