

Name Schlansky  
Mr. Schlansky

Date \_\_\_\_\_  
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      3) dilation centered at the origin with scale factor 2  
2) translation to the left 5 and down 4      4) rotation of  $270^\circ$  counterclockwise about the origin

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

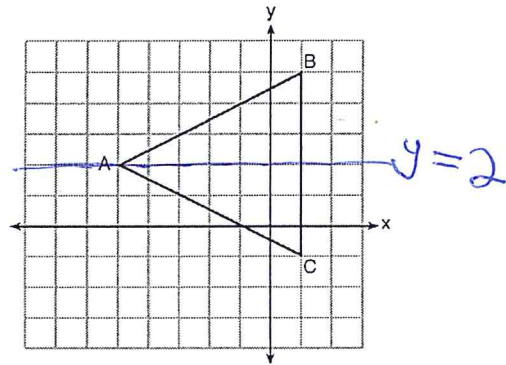
- 1) reflection over the y-axis  
2) rotation of  $90^\circ$  clockwise about the origin  
3) translation of 3 units right and 2 units down  
4) dilation with a scale factor of 2 centered at the origin

They all produce a congruent figure except dilation.

3. Triangle  $ABC$  is graphed on the set of axes below.

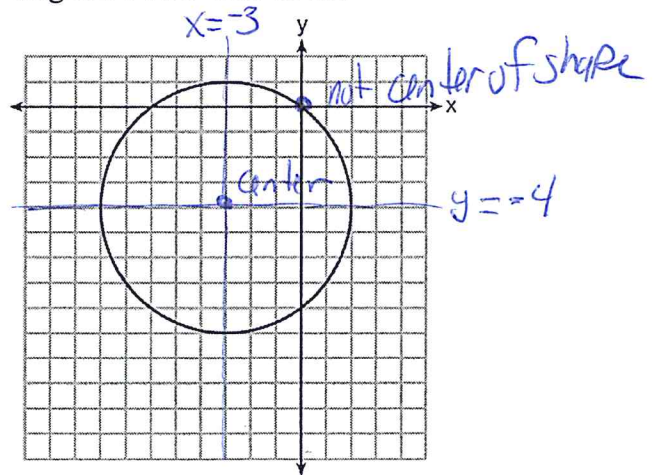
Which transformation maps  $\triangle ABC$  onto itself?

- ~~1) Reflection over the x-axis~~      YH      XV  
~~2) Reflection over  $x = 2$~~   
 3) Reflection over  $y = 2$       y=#      x=#  
~~4) Reflection over  $x = -2$~~       horizontal      vertical



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

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



Reflection: line of reflection = line of symmetry  
Rotation: center of rotation = center of shape

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

- 1)  $10^\circ$
- 2)  $150^\circ$

$\frac{360}{8} = 45$       3)  $225^\circ$        $45 \cdot 5 = 225$   
 4)  $252^\circ$

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

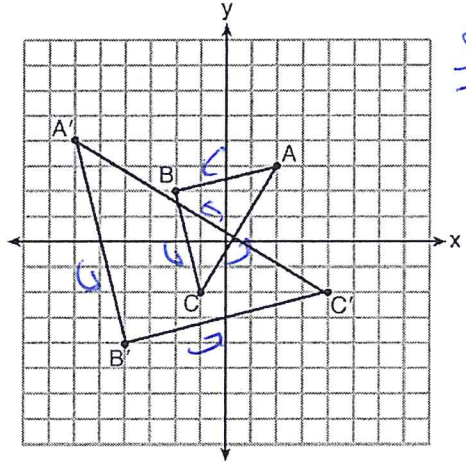
- (1)  $144^\circ$  (2)  $120^\circ$       (3)  $216^\circ$  (4)  $72^\circ$

$\frac{360}{5} = 72$

7. Which sequence of transformations will map  $\triangle ABC$  onto  $\triangle A'B'C'$ ?

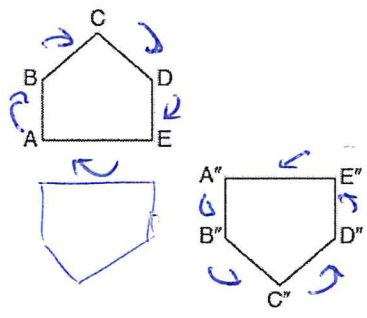
- 1) reflection and translation
- 2) rotation and reflection
- 3) translation and dilation
- 4) dilation and rotation

size changed



same orientation  
rotation

8. Identify which sequence of transformations could map pentagon  $ABCDE$  onto pentagon  $A''B''C''D''E''$ , as shown below.



opposite orientation  
reflection

- 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

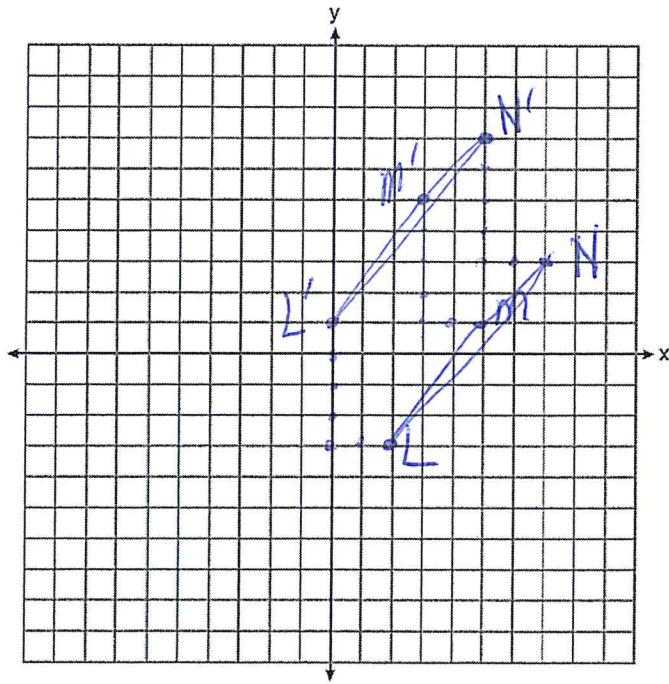
two reflections  
preserve orientation

1) minimum rotation:  $\frac{360}{n}$   
 2) Any multiple of that also maps it onto itself.

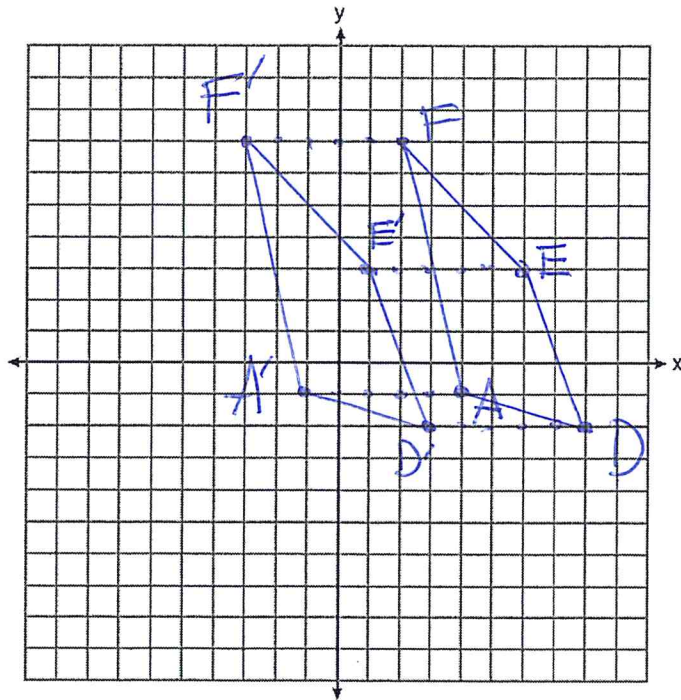
\*check for orientation!  
 same: rotation/translation  
 different: reflection

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

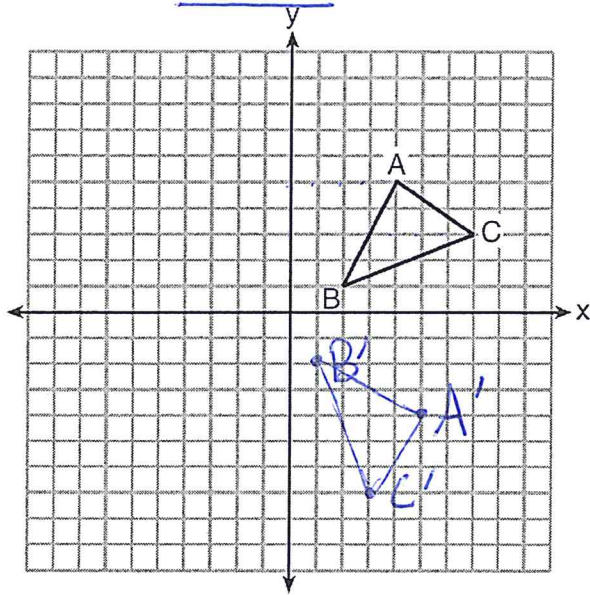
slide  
count on the graph



10. 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?

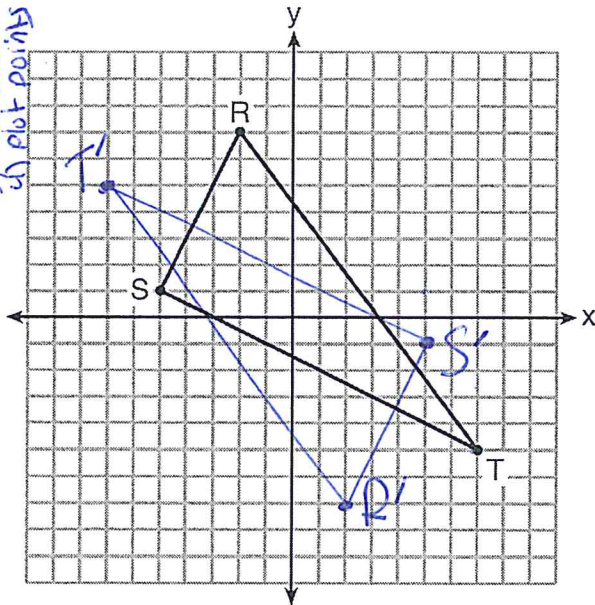


11. In the diagram below,  $\triangle ABC$  is graphed. Graph and state the coordinates of the image of  $\triangle ABC$  after a rotation of  $270^\circ$  centered at the origin and label it  $\triangle A'B'C'$ .



$A' (-2, -3)$   
 $B' (-1, -1)$   
 $C' (-3, -2)$

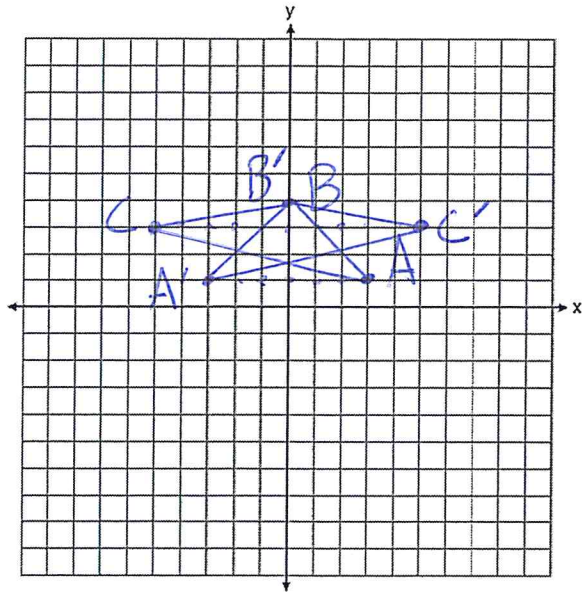
12. Triangle  $RST$  is graphed on the set of axes below. Graph the image of  $\triangle RST$  after a rotation of  $180^\circ$  centered at the origin and label it  $\triangle R'S'T'$ .



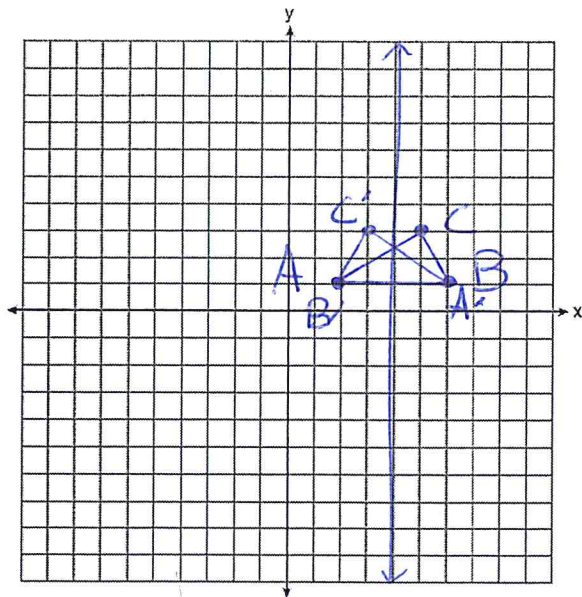
$R' (-2, -4)$   
 $S' (-1, -2)$   
 $T' (-3, -1)$

Rotation  
 1) Turn paper counter-clockwise  
 2) Copy down new coordinates  
 3) Turn back  
 4) Find old pts

13. 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.



14. 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.

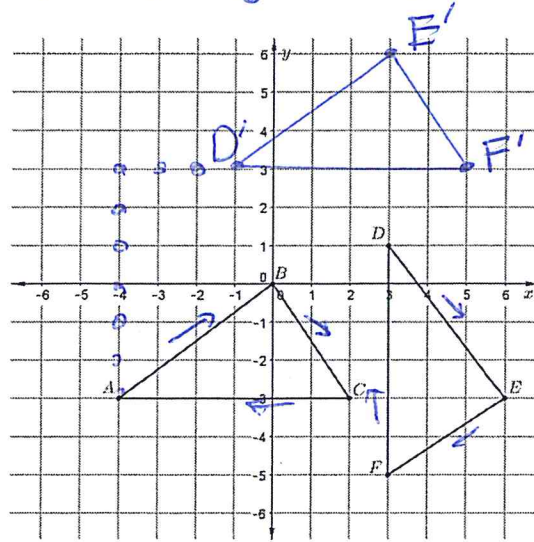


1) Identify the transformations  
check for orientation.  
Same: rotation/translation  
different: reflection

2) A — and — are rigid motions  
3) A rigid motion preserves size and angle measure producing a congruent figure.

15. The graph below shows  $\triangle ABC$  with  $A(-4,-3)$ ,  $B(0,0)$ , and  $C(2,-3)$  and  $\triangle DEF$  with  $D(3,1)$ ,  $E(6,-3)$ , and  $F(3,-5)$ . Determine a sequence of rigid motions that will map  $\triangle DEF$  onto  $\triangle ABC$ .

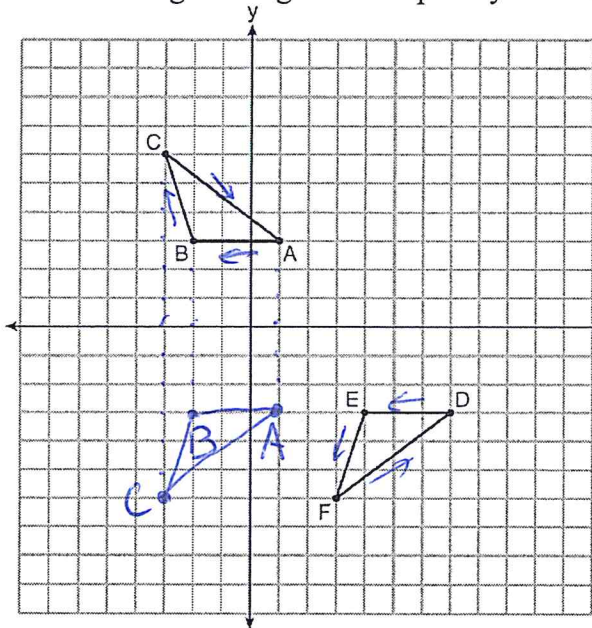
1) Rotate  $\triangle DEF$  counter-clockwise  $90^\circ$  centered at the origin followed by a translation 3 left and 6 down.



Same orientation  
rotation

$D'(-1, 3)$   
 $E'(3, 6)$   
 $F'(5, 3)$

16. Describe a sequence of transformations that will map  $\triangle ABC$  onto  $\triangle DEF$  as shown below. Are the triangles congruent? Explain your answer.



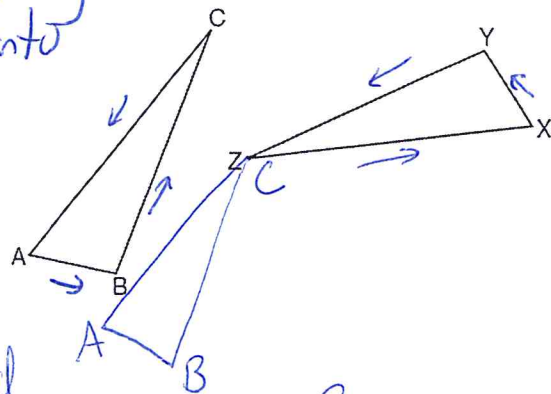
different orientation  
reflection

1) Reflect  $\triangle ABC$  over the x-axis followed by a translation 6 units to the right.  
2) Yes, a reflection and translation are rigid motions.  
3) A rigid motion preserves size and angle measure producing a congruent figure.

17. Describe a sequence of rigid motions that will map  $\triangle ABC$  onto  $\triangle XYZ$ .

1) translate C to Z followed by rotating  $\triangle ABC$  about C until it maps onto  $\triangle XYZ$

Same orientation  
rotation

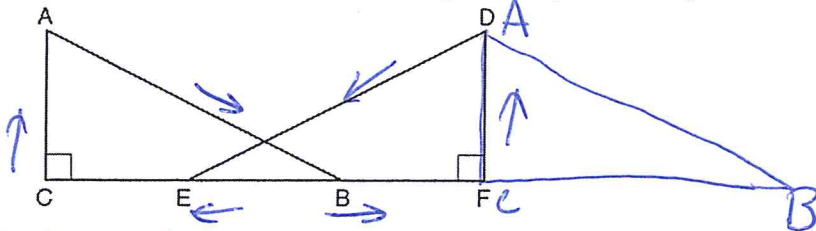


Is  $\triangle ABC \cong \triangle XYZ$ ? Justify your answer.

2) Yes, a translation and rotation are rigid motions.

3) A rigid motion preserves size and angle measure producing a congruent figure.

18. Given right triangles  $ABC$  and  $DEF$ . Describe a precise sequence of rigid motions which would show  $\triangle ABC \cong \triangle DEF$ . Explain why the triangles are congruent.



opposite orientation  
reflection

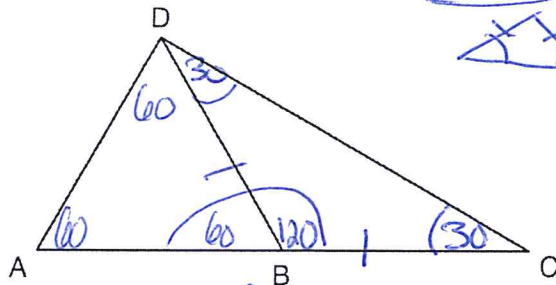
**Spiral Review**

**Complex Triangle Problems:**

- 1) The three angles of a triangle add to equal  $180^\circ$ . Look for triangles.
- 2) Linear pairs add to  $180^\circ$ . 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.)

1) translate  $\overline{AC}$  to  $\overline{DF}$   
followed by reflecting  $\triangle ABC$  over  $\overline{DF}$   
2) A translation and reflection are rigid motions  
3) A rigid motion preserves size and angle measure producing a congruent figure

19. 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  $m\angle C$ .



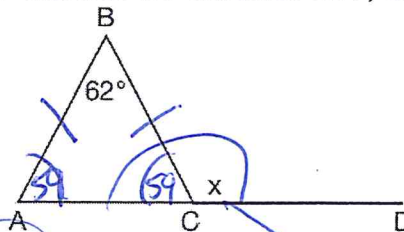
$\frac{180}{-60}$   
 $\frac{120}{\text{Linear pair}}$

$\triangle DBC$

$$\begin{aligned} x + x + 120 &= 180 \\ 2x + 120 &= 180 \\ -120 \quad -120 & \\ \frac{2x}{2} &= \frac{60}{2} \\ x &= 30 \end{aligned}$$

$m\angle C = 30^\circ$

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



$\triangle ABC$

$$\begin{aligned} x + x + 62 &= 180 \\ 2x + 62 &= 180 \\ -62 \quad -62 & \\ \frac{2x}{2} &= \frac{118}{2} \\ x &= 59 \end{aligned}$$

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

- 1)  $59^\circ$
- 2)  $62^\circ$
- 3)  $118^\circ$
- 4)  $121^\circ$

$\triangle ABC$

Linear pair

$$\frac{180}{-59}$$

$\frac{121}{\text{Linear pair}}$

