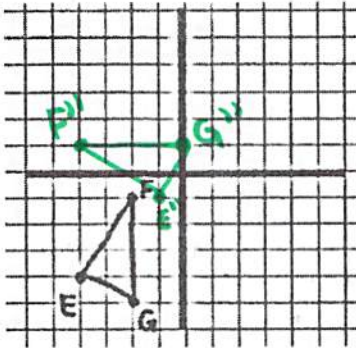
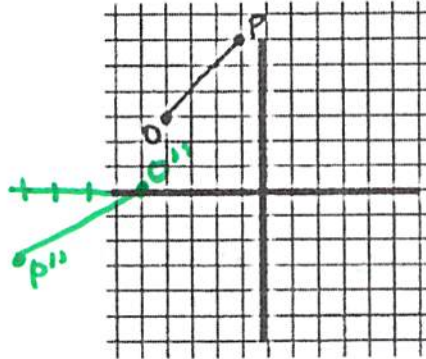


Directions: Complete each sequence of transformations.

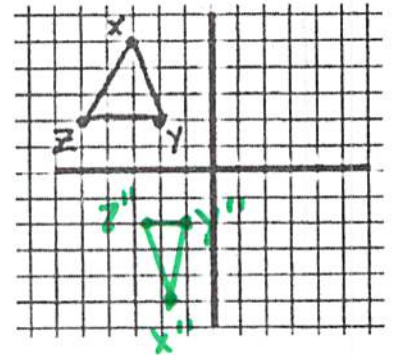
- 1) Translate 3 units right & 5 units up.  
Then, rotate  $90^\circ$  CCW about the origin.



- 2) Rotate  $180^\circ$  CCW about  $(-2, -1)$ .  
Then, reflect over  $y = x$ .



- 3) Shrink horizontally by  $\frac{1}{2}$ .  
Then, reflect over  $y = 0$ .



Directions: Find  $A''$  given the sequence of transformations.

- 4)  $A(4, -2)$ ; Reflect over  $y = -x$ ; then, dilate by a scale factor of 2 with the origin as a center.

$$A''(4, -8)$$

- 5)  $A(0, -3)$ ; Rotate  $90^\circ$  CW about the origin; then, horizontally stretch by 3.

$$A''(-9, 0)$$

- 6)  $A(-2, 2)$ ; Translate 6 units down; then, dilate by a scale factor of  $\frac{1}{2}$  with a center of  $(4, -1)$ .

$$A''(1, -2.5)$$

Directions: Use the rule for the sequence of transformations to find  $B''$ .

- 7)  $(x, y) \rightarrow "(x - 3, -y)"$  when  $B(4, 5)$

$$B''(1, -5)$$

- 9)  $(x, y) \rightarrow "(-4x, y)"$  when  $B(-5, -1)$

$$B''(20, -1)$$

- 8)  $(x, y) \rightarrow "(y, 4x)"$  when  $B(-1, 6)$

$$B''(6, -4)$$

- 10)  $(x, y) \rightarrow "(-3y, 3x)"$  when  $B(0, 2)$

$$B''(-6, 0)$$

Directions: Describe the sequence of transformations displayed in each rule.

- 11)  $(x, y) \rightarrow "(x - 3, -y)"$

left 3 & ref. over x-axis

- 13)  $(x, y) \rightarrow "(-4x, y)"$

ref over y-axis & horz str by 4

- 12)  $(x, y) \rightarrow "(y, 4x)"$

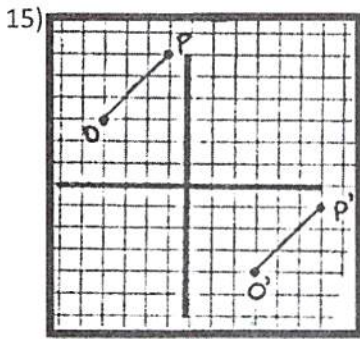
horz str by 4 & ref over  $y = x$

- 14)  $(x, y) \rightarrow "(-3y, 3x)"$

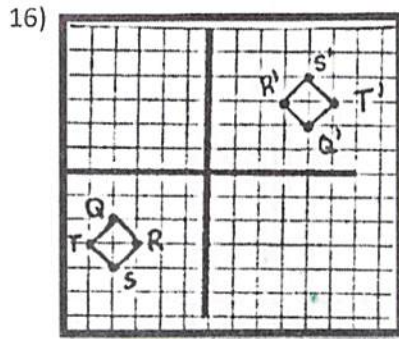
dil by 3 &  $90^\circ$  CW rot.

reflect over  $y = x$  & vert str by 4  
OR

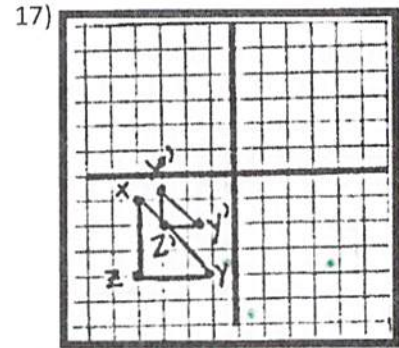
Directions: Describe how each pre-image can be mapped onto the image using ONE transformation.



ref over  $y=x$

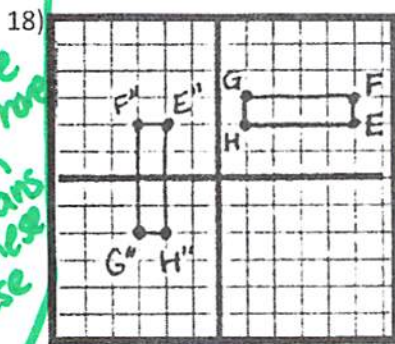


rot  $180^\circ$  CW



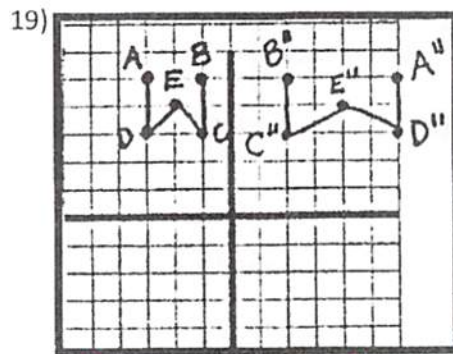
dil by  $1/2$  using  $(-2, 0)$  as the center

Directions: Describe how each pre-image can be mapped onto the image using TWO transformations.

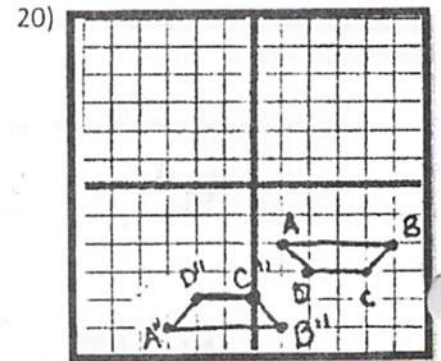


\* there are more than one ans on these... these are just an example

$90^\circ$  CCW rot then down 3



ref over  $y$ -axis then horz str by 2



ref over  $y=3.5$  then trans 4 units left

Directions: Describe how each pre-image can be mapped onto itself using the specified number of transformations.

21)  $A(3, 5)$  &  $B(2, 1)$ ;

2 transformations involving 2 dilations

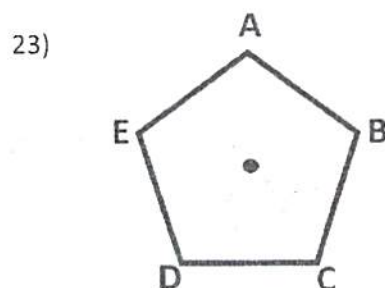
ex: dil by  $1/2$  then dil by 2 (ans will vary)

22)  $A(3, 5)$  &  $B(2, 1)$ ;

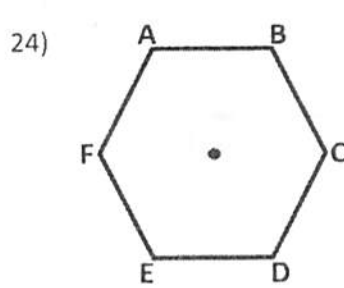
3 transformations using a rotation & 2 reflections

ex: ① ref over  $x$ -axis  
② rot  $360^\circ$  CW  
③ ref over  $x$ -axis

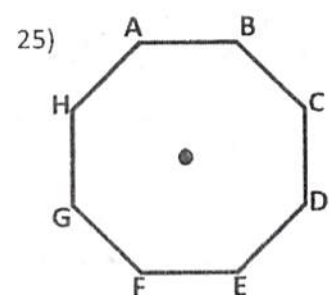
Directions: Circle each of the angle measures that would map the image onto itself through a rotation around the fixed point. Each polygon is a regular polygon.



$36^\circ$   $72^\circ$   $90^\circ$   $144^\circ$



$90^\circ$   $120^\circ$   $180^\circ$   $240^\circ$



$45^\circ$   $90^\circ$   $120^\circ$   $585^\circ$