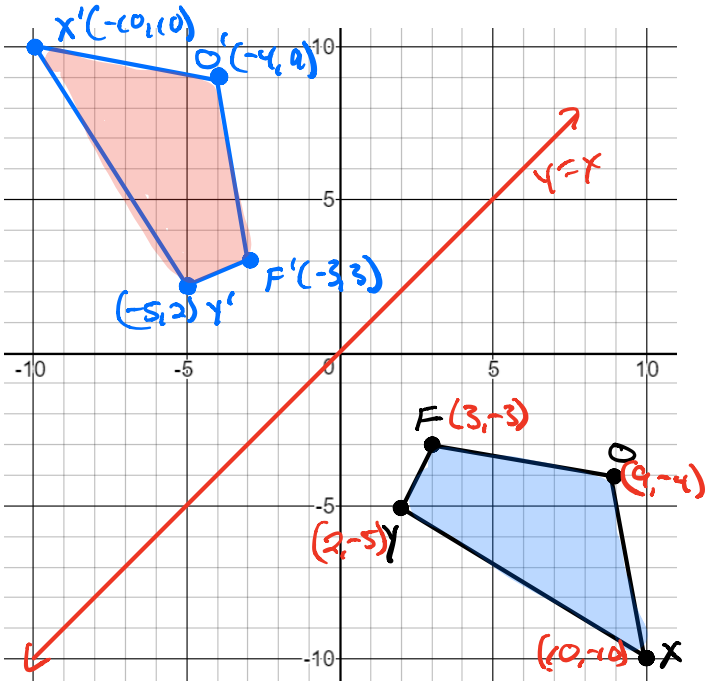
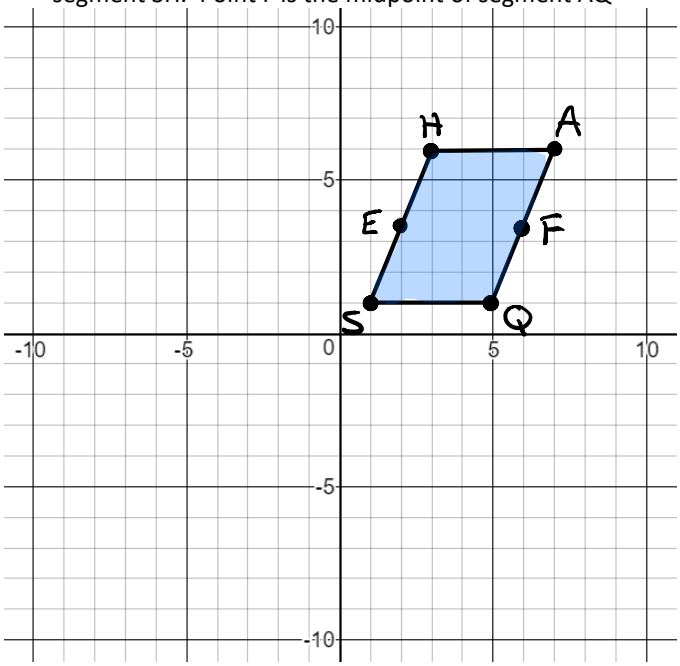
Geometry
HW Review 1

Name_____

1) Reflect FOXY across line y = x.



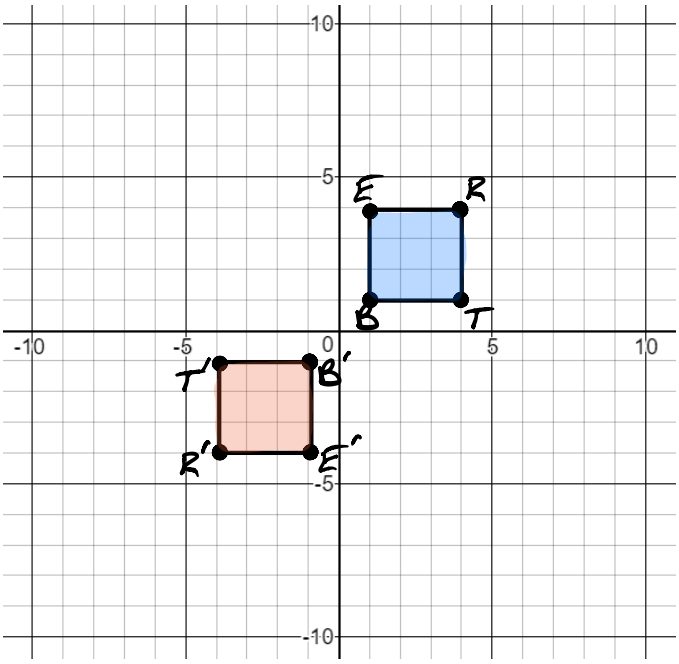
2) Parallelogram SHAQ is shown. Point E is the midpoint of segment SH. Point F is the midpoint of segment AQ



Which transformation carries the parallelogram onto itself?

A) A reflection across line segment SA? False
B) A reflection across line segment EF? False
C) A rotation of 180 degrees clockwise about the origin False
D) A rotation of 180 degrees clockwise about the center of the parallelogram. True

3) Square BERT is transformed to create the image B'E'R'T', as shown.



Select all of the transformations that could have been performed.

A) A reflection across the line y = x F
B) A reflection across the line y = -2x F
C) A rotation of 180 degrees clockwise about the origin T
D) A reflection across the x-axis, and then a reflection across the y-axis. T
E) A rotation of 270 degrees counterclockwise about the origin, and then a reflection across the x-axis. F

4) Smelly Kid performs a transformation on a triangle. The resulting triangle is similar but not congruent to the original triangle. Which transformation did Smelly Kid perform on the triangle?

A) Dilation
B) Reflection
C) Rotation
D) Translation

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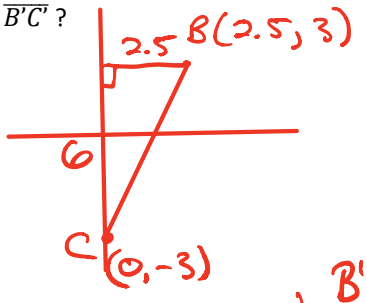
5) Triangle ABC had vertices of A(1, 1), B(2.5, 3) and C(0, -3). It is dilated by a scale factor of ½ about the origin to create triangle A'B'C'. What is the length, in units, of side $\overline{B'C'}$?



$x^2 + y^2 = (BC)^2$
$(2.5)^2 + (6)^2 = (BC)^2$
$6.25 + 36 = (BC)^2$
$42.25 = (BC)^2$
$6.5 = BC$

$B'C' = SF \cdot BC$
$B'C' = \frac{1}{2} BC$
$= \frac{1}{2}(6.5)$
$B'C' = 3.25$

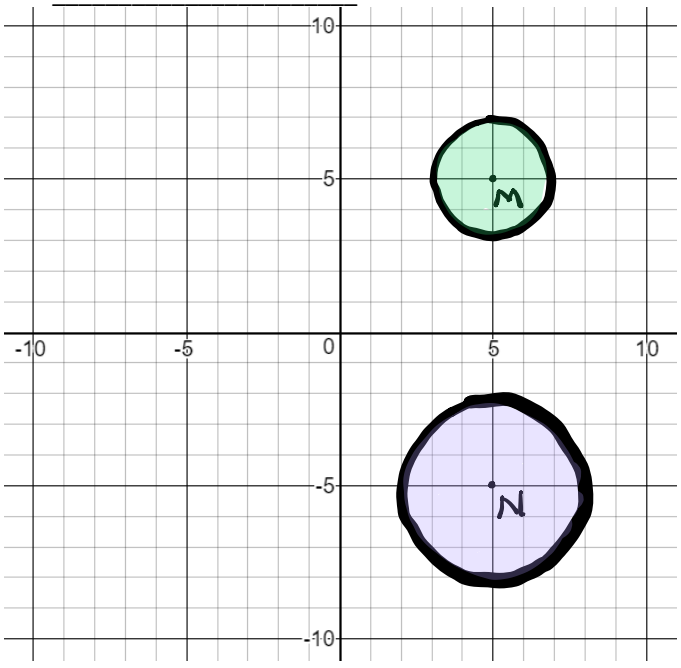
6) Complete the statement to explain how it can be shown that two circles are similar.

Circle M can be mapped onto circle N by a reflection

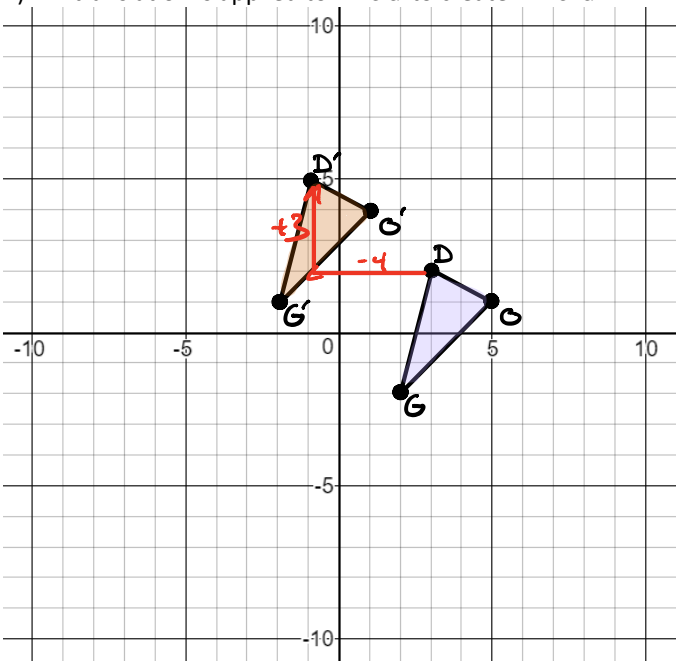
across X-axis and a dilation

about the center of circle M by a scale factor of $\frac{3}{2}$

$r_M \cdot SF = r_N$
$(2)SF = 3$
$SF = \frac{3}{2}$



7) A translation is applied to ΔDOG to create $\Delta D'O'G'$.



Let the statement $(x, y) \rightarrow (a, b)$ describe the translation. Create equations for *a* in terms of *x* and for *b* in terms of *y* that could be used to describe the translation.

a = x - 4

b = y + 3

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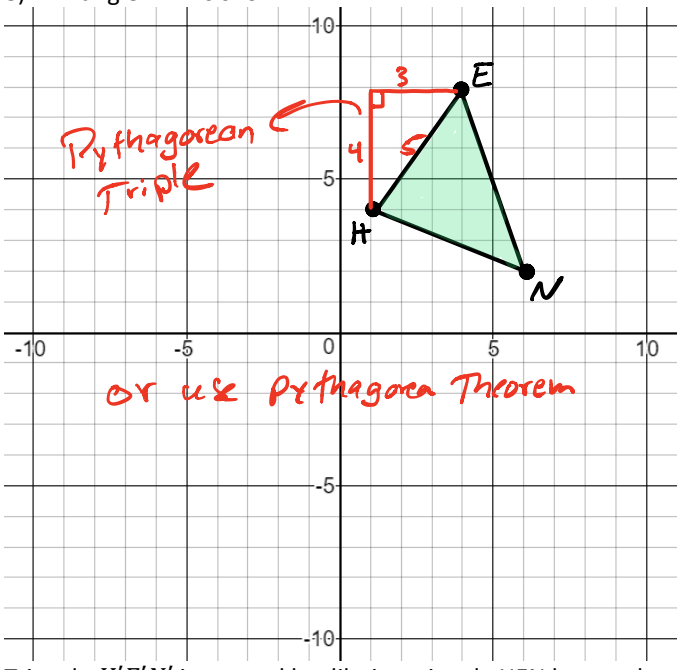
8) Triangle HEN is shown.



Triangle $H'E'N'$ is created by dilating triangle HEN by a scale factor of 4. What is the length of $\overline{H'E'}$?

$H'E' = SF \cdot HE$

$H'E' = 4\,HE$

$= 4(5)$

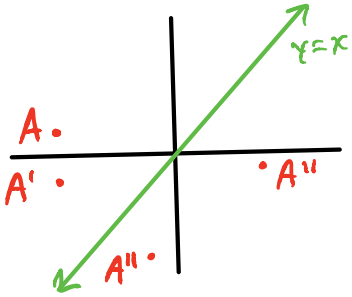
$H'E' = 20$

9) A figure is fully contained in Quadrant II. The figure is transformed as shown.

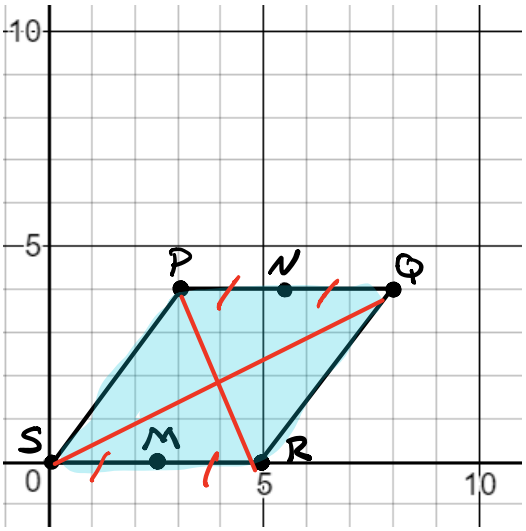
- A reflection over the x-axis
- A reflection over the line y = x
- A 90° counterclockwise rotation about the origin.

In which quadrant does the resulting image lie?

A) Quadrant I
B) Quadrant II
C) Quadrant III
D) Quadrant IV



10) Rhombus PQRS is shown in the coordinate plane. Points M and N are midpoints of their respective sides.



Select all of the transformations that map the rhombus onto itself.

A) A 90° clockwise rotation around the center of the rhombus
B) A 180° clockwise rotation around the center of the rhombus
C) A reflection across $\overline{PR}$
D) A reflection across $\overline{NM}$
E) A reflection across $\overline{QS}$

11) Triangle ABC is reflected across the line y = 2x to form triangle RST. Select all of the true statements.

A) $\overline{AB} = \overline{RS}$ (I know this notation is wrong, but some moron used this wrong notation on the state test.)
B) $\overline{AB} = 2 \cdot \overline{RS}$ (I know this notation is wrong, but some moron used this wrong notation on the state test.)
C) $\Delta ABC \sim \Delta RST$
D) $\Delta ABC \cong \Delta RST$
E) $m\angle BAC = m\angle SRT$
F) $m\angle BAC = 2 \cdot m\angle SRT$

$\triangle ABC \cong \triangle RST$

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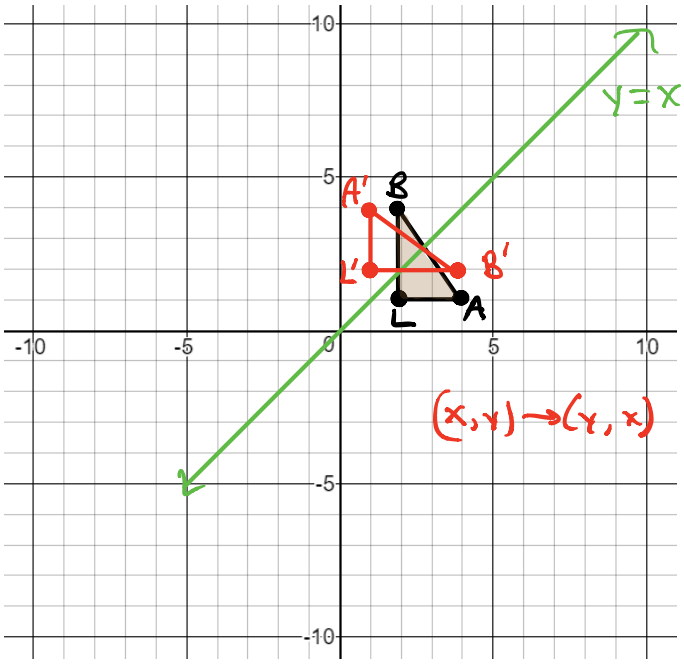
12) Triangle BAL is reflected across the line y = x. Draw the resulting triangle.



13) All corresponding sides and angles of ΔRST and ΔDEF are congruent.
Select all of the statements that must be true.

A) There is a reflection that maps $\overline{RS}$ to $\overline{DE}$ Maybe
B) There is a dilation that maps ΔRST to ΔDEF Never
C) There is a translation followed by a rotation that maps $\overline{RT}$ to $\overline{DF}$ Always
D) There is a sequence of transformations that maps ΔRST to ΔDEF Always
E) There is not necessarily a sequence of rigid motions that maps ΔRST to ΔDEF Maybe

14) The coordinate plane shows ΔFGH and $\Delta F"G"H"$

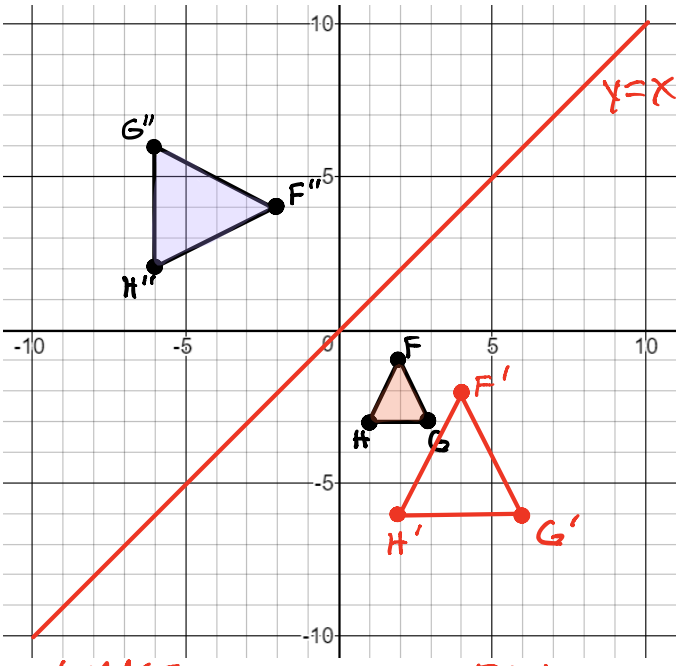


IMAGE is Larger, so SF > 1

Which sequence of transformations can be used to show that $\Delta FGH \sim \Delta F"G"H"$?

A) A dilation about the origin with a scale factor of 2, followed by a 180° clockwise rotation about the origin.
B) A dilation about the origin with a scale factor of 2, followed by a reflection over the line y = x
C) A translation 5 units up and 4 units left, followed by a dilation with a scale factor of ½ about point F"
D) A 180° clockwise rotation about the origin, followed by a dilation with a scale factor of ½ about F"

SF = 2
Orientation is different so it must be a reflection

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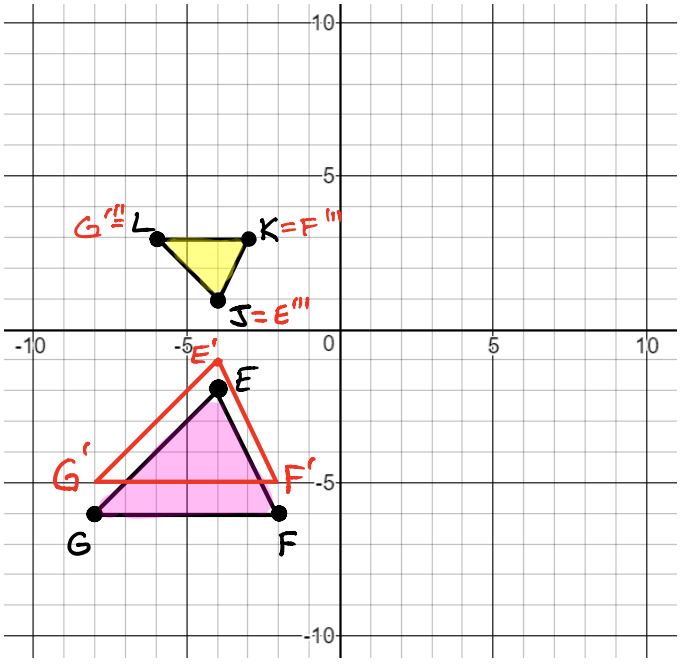
15) Two triangles are shown.

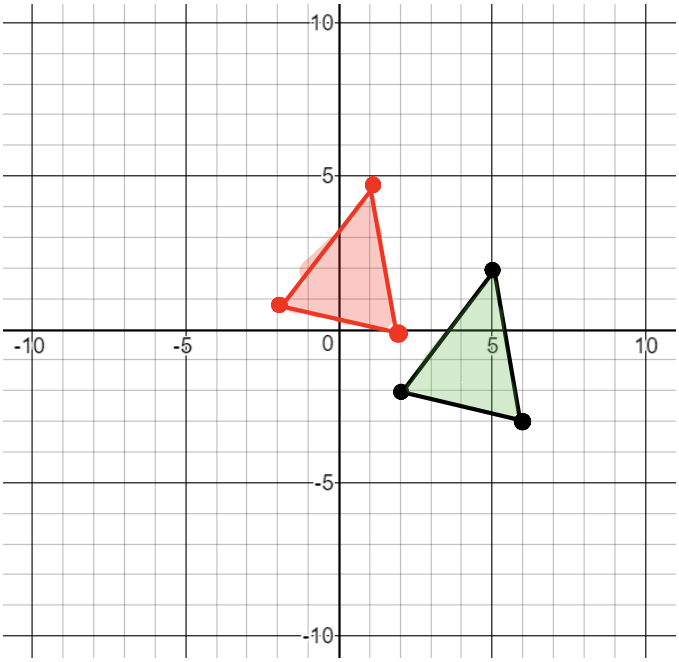
Which sequence of transformations could be performed on ΔEFG to show that it is similar to ΔJKL?

A) Rotate ΔEFG 90° clockwise about the origin, and then dilate it by a scale factor of ½ with a center of dilation at point F'
B) Rotate ΔEFG 180° clockwise about point E, and then dilate it by a ~~scale factor of 2~~ with a center of dilation at point E'
C) Translate ΔEFG 1 unit up, then reflect it across the x-axis, and then dilate it by a factor of ½ with a center of dilation at point E"
D) Reflect ΔEFG across the x-axis, then reflect it across the line y = x, and then dilate it by a ~~scale factor of 2~~ with a center of dilation at point F"

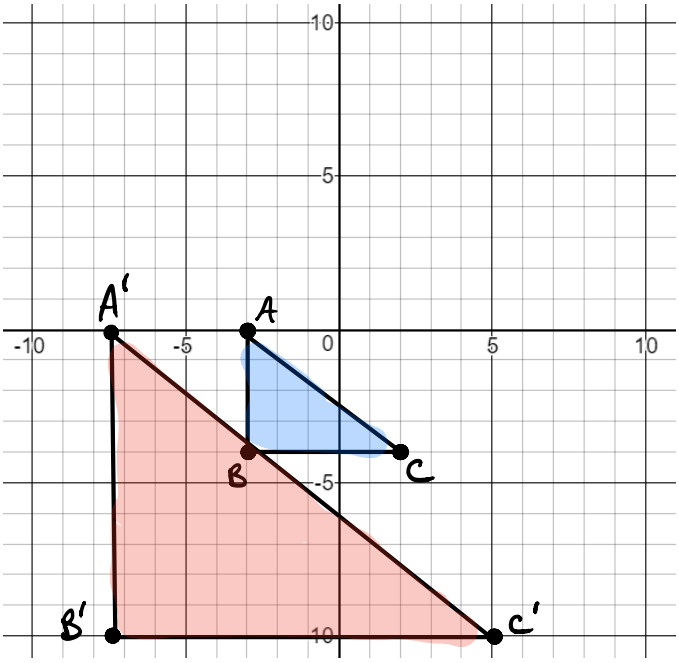


SF = 1/2
Orientation is different, so reflection

16) A triangle is shown on the coordinate grid. Draw the triangle after a transformation following the rule $(x, y) \rightarrow (x - 4, y + 3)$



17) Triangle ABC is dilated with a scale factor of k and a center of dilation at the origin to obtain triangle A'B'C'.



What is the scale factor? $AB \cdot SF = A'B'$
$(4) \cdot SF = 10$
$SF = \frac{10}{4}$
$SF = 5/2$

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18) A square is rotated about its center.

Select all of the angles of rotation that will map the square onto itself.

A) 45 degrees
B) 60 degrees
C) 90 degrees
D) 120 degrees
E) 180 degrees
F) 270 degrees

Order of rotation = 4

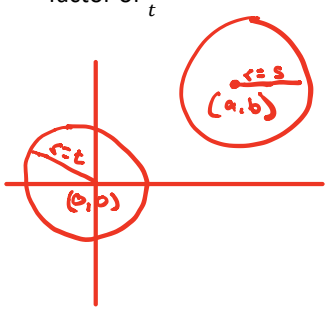
angle of rotation = $\frac{360°}{4} = 90°$

So, 90°, 180°, 270°, 360°

19) Circle J is located in the first quadrant with center (a, b) and radius s. Felipe transforms Circle J to prove that it is similar to any circle centered at the origin with radius t.

Which sequence of transformations did Felipe use?

A) Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{t}{s}$
B) Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{s}{t}$
C) Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{t}{s}$
D) Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{s}{t}$



Translate $\langle -a, -b \rangle = (x-a, y-b)$

Scale factor

$s \cdot SF = t$

$SF = \frac{t}{s}$