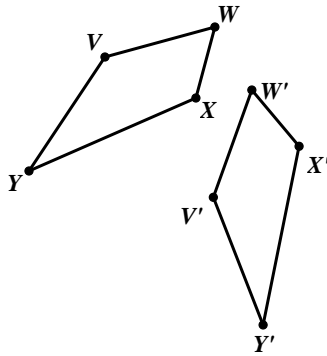


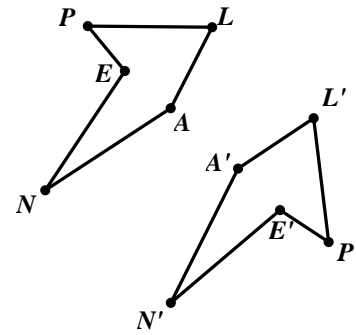
Sec 1H Unit 8 - Transformations Review

For each of the four sets of figures, decide what transformation has occurred. Explain how you know.

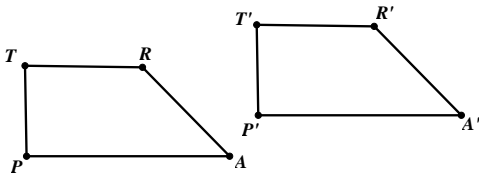
1. a)



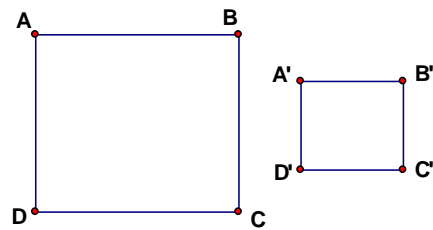
b)



c)



d)



2. a. List the transformation(s) we studied in this unit that are rigid transformations.

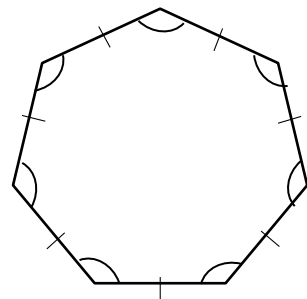
b. List the transformation(s) that are not rigid transformations but create similar shapes.

3. For the **regular** polygon at the right:

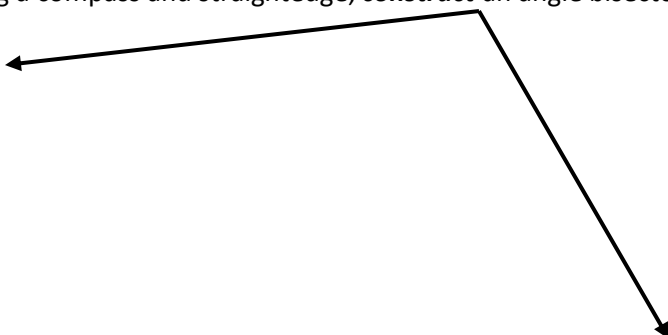
a. Name the polygon.

b. Draw one diagonal on the polygon.

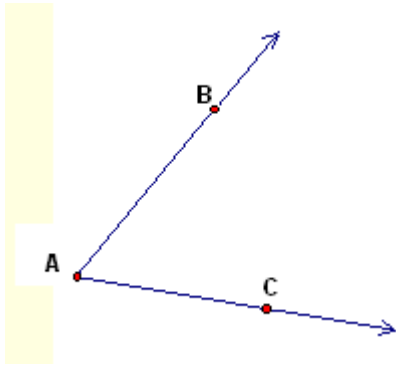
c. Is your diagonal a line of symmetry? Explain how you know.



4. Using a compass and straightedge, **construct** an angle bisector of the following angle.

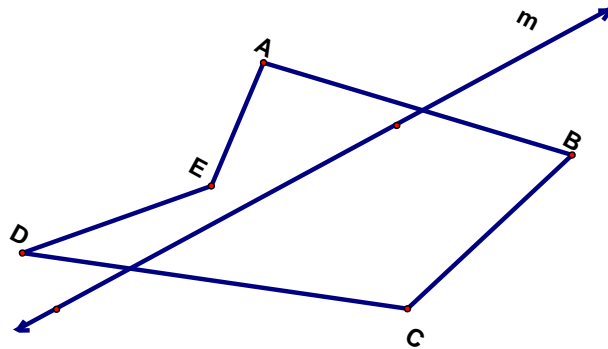


5. Using a compass and straightedge, **construct** a copy of the following angle.

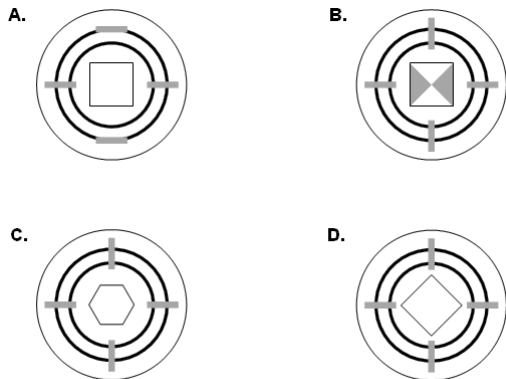


The mere imparting of information is not education. Above all things, the effort must result in making a man think and do for himself. — Carter Godwin Woodson

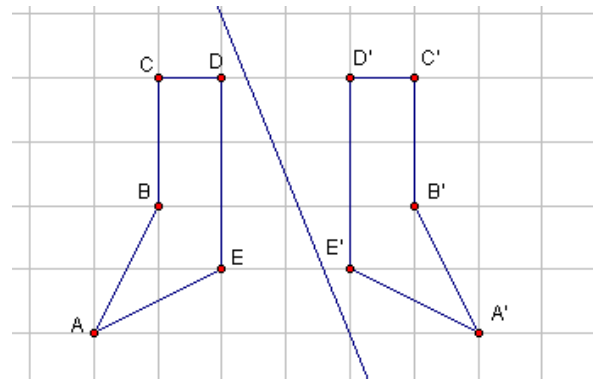
6. Reflect polygon ABCD over line m . (You can use the poor man's mira.)



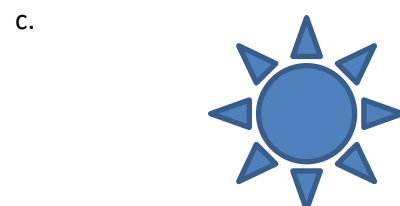
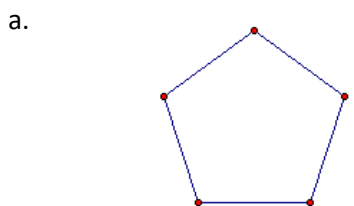
7. Which of the following have 90 degrees rotational symmetry about the center?



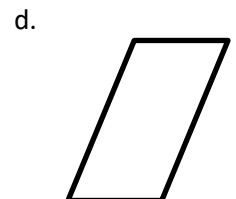
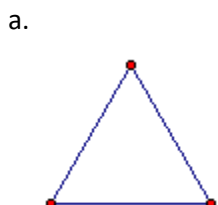
8. Is this the correct line of reflection? Explain why or why not. If not, draw the correct line.



9. Give the initial angle of rotation and the center of rotation for each figure below. If there is none, write none.



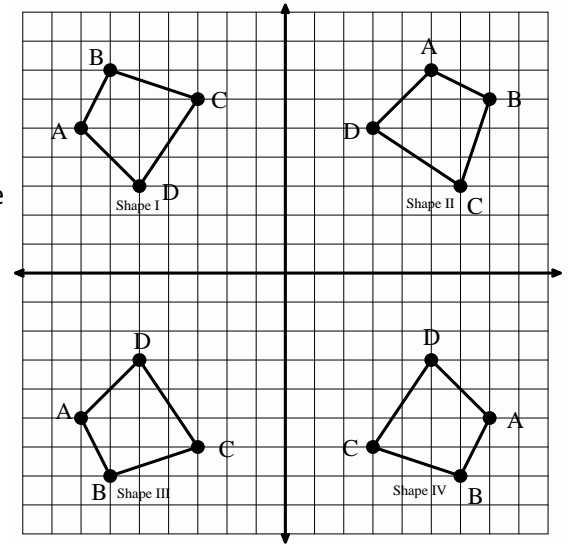
10. Draw any and all lines of symmetry for each polygon. If there aren't any write none.



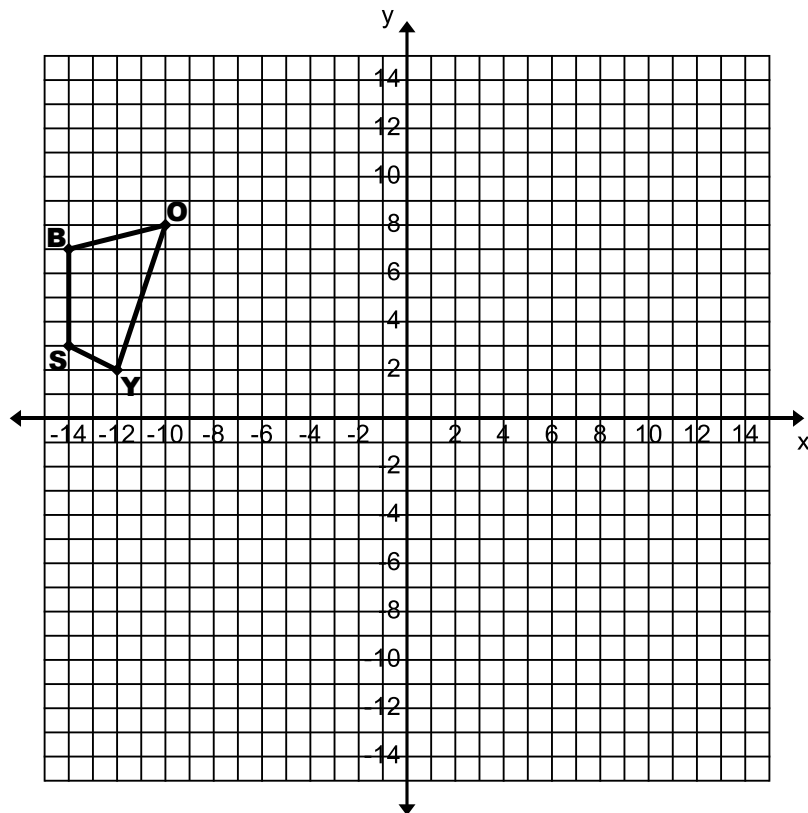
11. If I have a regular polygon that has 15 sides (a 15-gon)
 a. How many lines of symmetry are there? b. What is the initial angle of rotation?

Use the diagram to match the Pre-Image/Image with the appropriate transformation.

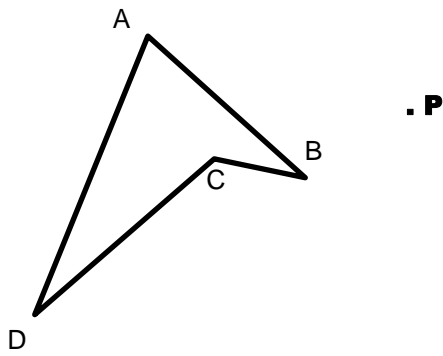
- | | |
|---|---|
| _____ 12. Pre-image: Shape I
Image: Shape II | A. Rotated 180° around the point (0, 0) |
| _____ 13. Pre-image: Shape II
Image: Shape III | B. Reflected over the line $y = -x$ |
| _____ 14. Pre-image: Shape IV
Image: Shape II | C. Rotated 270° counter-clockwise around the point (0, 0) |
| _____ 15. Pre-image: Shape I
Image: Shape IV | D. Reflected over the line $y = 0$ |
| _____ 16. Pre-image: Shape I
Image: Shape III | E. Rotated 90° counter-clockwise around the point (0, 0) |



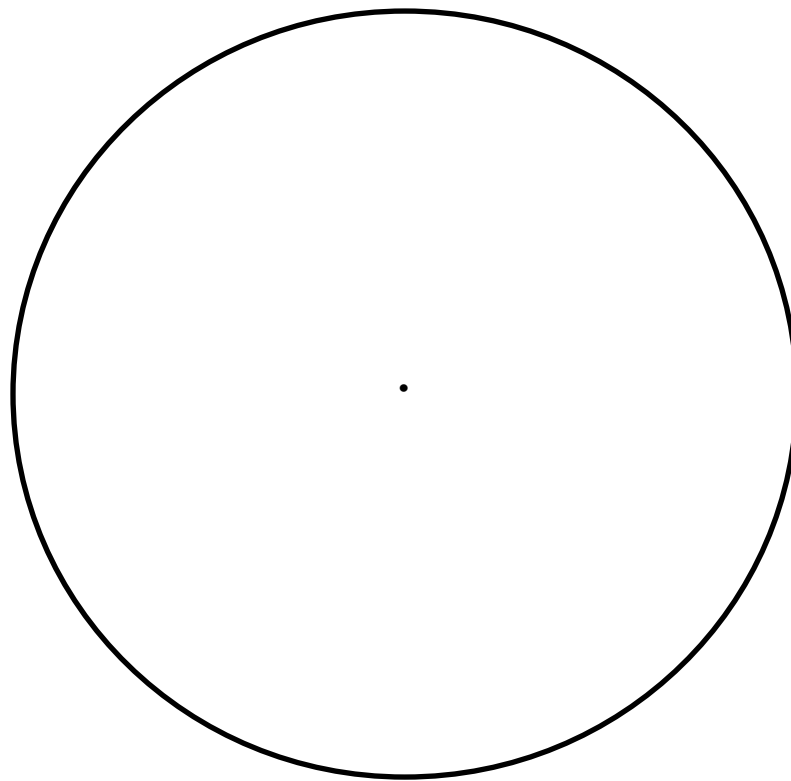
17. Rotate the pre-image BOYS 90° clockwise around the origin. Label the image B'O'Y'S'.
 Reflect the image B'O'Y'S' over the x-axis. Label the image B''O''Y''S''.
 Translate B''O''Y''S'' 10 units left and 6 units up. Label the image B'''O'''Y'''S'''.



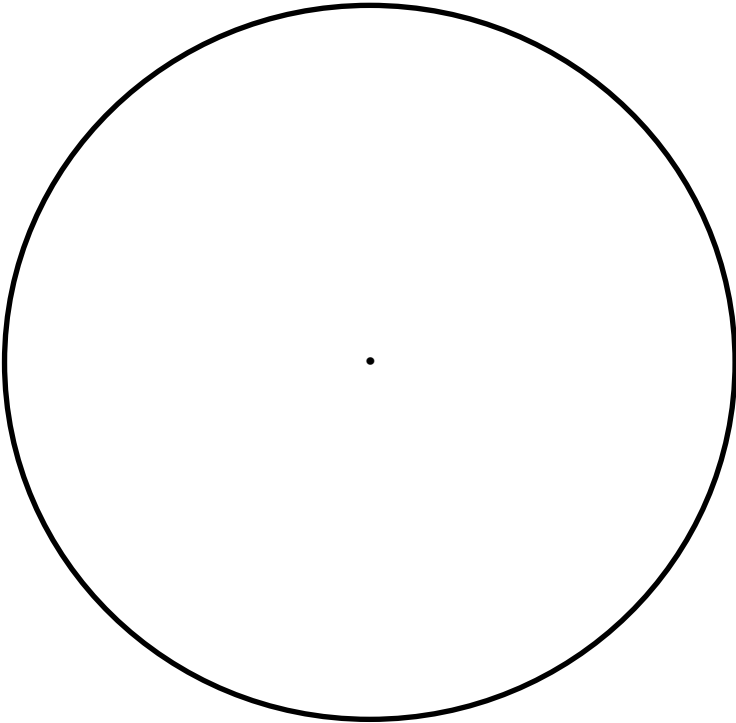
18. Use a straightedge and a protractor to rotate the pre-image ABCD 110° counter-clockwise around P. Label your image $A'B'C'D'$.



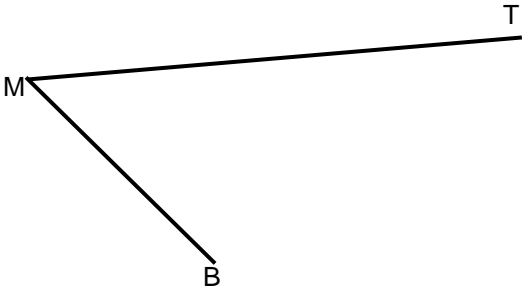
19. Construct a hexagon inscribed in this circle:



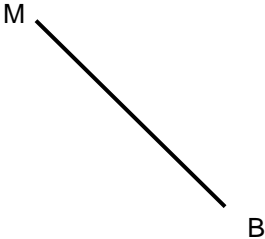
20. Construct a square inscribed in this circle:



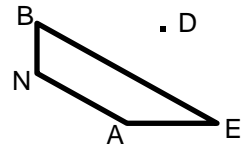
21. Construct a rhombus with side MB.



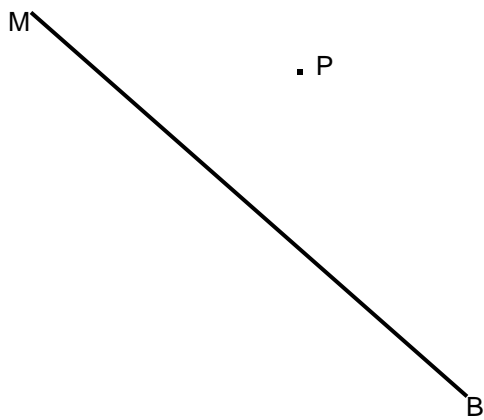
22. Construct a square with side MB.



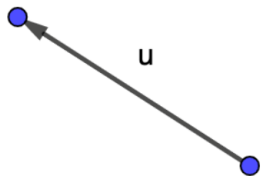
23. Construct a dilation with scale factor 4, using point D as the center of dilation.



24. Construct a line parallel to \overline{MB} , through point P.



25. Translate the "T" in Tik Tok by vector u.



- 26. a)** A Boeing 737 airplane is flying west from Jersey City to Salt Lake City at a speed of 580 miles per hour. A headwind is blowing east against the airplane at a rate of 65 miles per hour. What is the net speed of the airplane? Draw a vector diagram showing the resultant vector.
- b)** On the return trip from Salt Lake City to Jersey City, the wind is still blowing at a rate of 65 miles per hour but now it is a tailwind blowing with the airplane. What is the net speed of the airplane on the return trip? Draw a vector diagram showing the resultant vector.

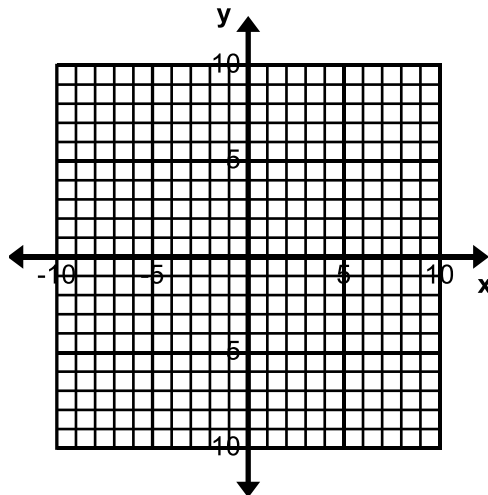
Four vectors are: $\vec{b} = \langle 8, 15 \rangle$, $\vec{a} = \langle -10, 3 \rangle$, $\vec{r} = \langle 24, 7 \rangle$, $\vec{n} = \langle -29, -16 \rangle$

- 27.** Find the magnitude of \mathbf{b} : Find the magnitude of \mathbf{a} :
- 28.** Find the vector coordinates of $\mathbf{n} - \mathbf{r}$:
- 29.** Find the vector coordinates of $\mathbf{b} + 3\mathbf{a}$:

A triangle has vertices $(-8,0)$, $(-5,3)$, and $(-1,-4)$

- 30. a)** Write a 2×3 matrix using the vertices.
- b)** Find the product of this transformation matrix: $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ and the vertices matrix from part a):

- c)** Graph the pre-image and the image:



- 31.** Use this matrix to transform the vertices matrix from part a). $\begin{bmatrix} \frac{1}{2} & 0 \\ 0 & 3 \end{bmatrix}$
- Explain how the triangle was transformed using precise language: