

Introduction to Polygons – Part 1**Dilation of Polygons****Independent Practice**

1. Hexagon *FUTBOL* has coordinates $F(3, 6)$, $U(5, 2)$, $T(2, -3)$, $B(-3, -2)$, $O(-5, 1)$, and $L(-2, 5)$, and it is dilated by a scale factor of five centered at the origin.

What are the coordinates of $F'U'T'B'O'L'$?

2. Pentagon *CRAFT* has coordinates $C(-2, 1)$, $R(-5, 2)$, $A(-6, 7)$, $F(-3, 9)$, and $T(-1, 6)$ and it is dilated by a scale factor of $\frac{2}{3}$ centered at the origin.

Part A: Determine in which quadrant $C'R'A'F'T'$ will be located.

Part B: Let the origin be point O . Determine the difference in length between \overline{OC} and $\overline{OC'}$.

Part C: What is the x -coordinate of A' ?

Part D: What is the difference between the y -coordinate of F' and the y -coordinate of T' ?

3. Consider the following statement.

A dilation of square $ABCD$ centered at the origin with a scale factor of $\frac{4}{3}$ will place $A'B'C'D'$ closer to point $(0, 0)$.

Determine the validity of this statement. Justify your answer.



4. Quadrilateral $CART$ is dilated with the center at the origin and a scale factor of $\frac{6}{5}$.

Describe Quadrilateral $CART$ and Quadrilateral $C'A'R'T'$ by completing the table below with the most appropriate answer.

Quadrilateral $PINT$	Quadrilateral $P'I'N'T'$
(x, y)	(,)
$C(-5, 15)$	$C'(\quad, \quad)$
$A(\quad, \quad)$	$A'(12, 6)$
$R(\quad, \quad)$	$R'(-24, -12)$
$T(-25, 0)$	$T'(\quad, \quad)$

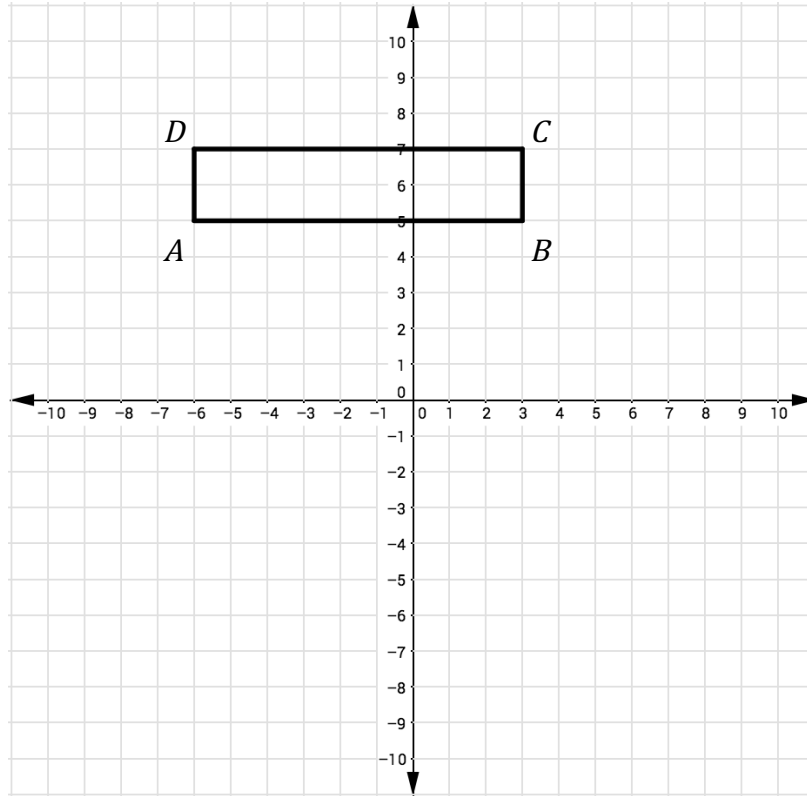
5. Consider the following standard.

MAFS.912.G-CO.1.4.: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

Part A: Determine what dilations have in common with translations, reflections and rotations in terms of any of the following: angles, circles, perpendicular lines, parallel lines, and line segments.

Part B: Develop a comparison between dilations and translations, reflections and rotations in terms of any of the following: angles, circles, perpendicular lines, parallel lines, and line segments.

6. Consider rectangle $ABCD$.



Dilate $ABCD$ by a scale factor of $\frac{1}{2}$ using a center of dilation of $(-2, 2)$. Draw $A'B'C'D'$ on the same coordinate plane.

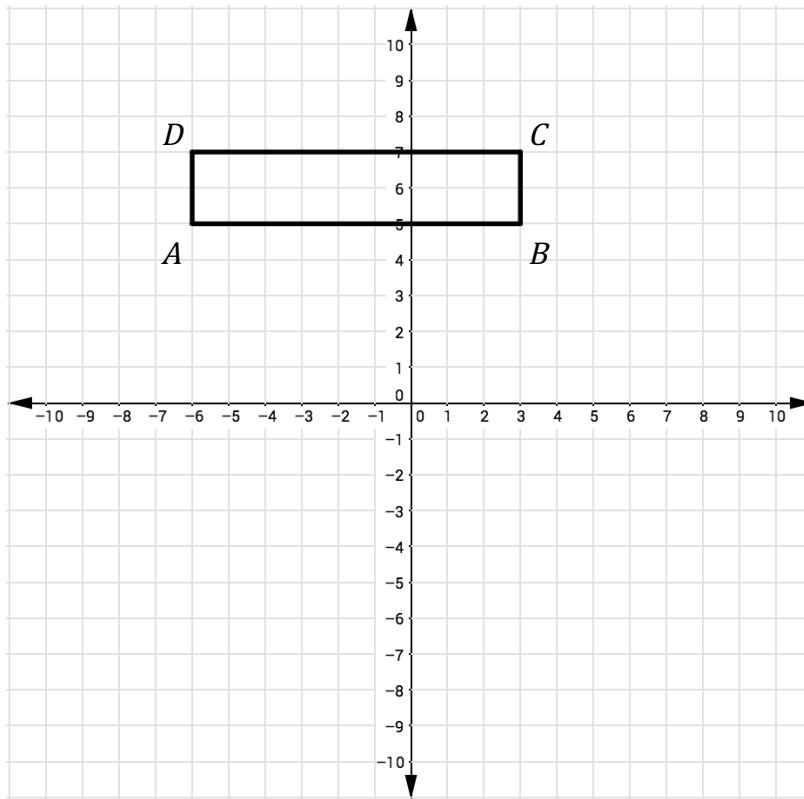
7. Triangle FIP was dilated by a scale factor of $\frac{1}{4}$ centered at the origin to create triangle $F'I'P'$, which has coordinates $F'(1, -\frac{3}{2})$, $I'(2, -1)$, $P'(1, 2)$. Write the coordinates of the vertices of triangle FIP in the spaces provided below.

F (_____, _____)

I (_____, _____)

P (_____, _____)

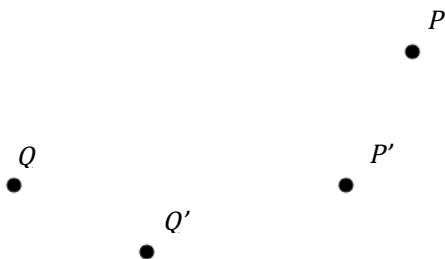
8. Consider rectangle $ABCD$.



Suppose $ABCD$ is dilated with the center at vertex C and a scale factor of three. Determine the sum of the y -coordinates of $A'B'C'D'$.

Bonus Question!

9. Consider the diagram below.



Find the center of dilation and the scale factor that takes P to P' and Q to Q' , if a dilation exists.