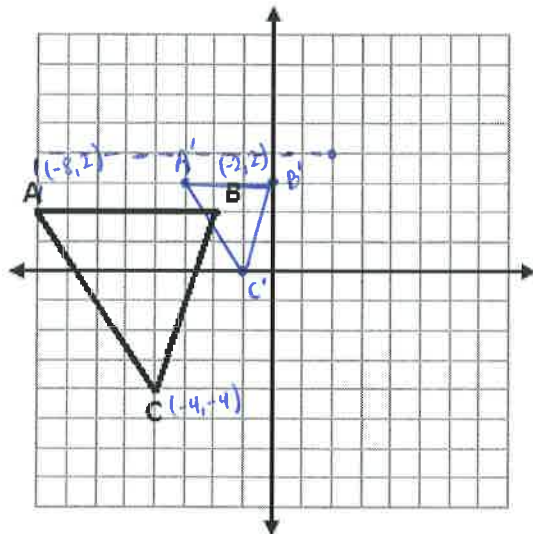




- I can dilate an image with respect to a point that is not the origin.

When the center of dilation is not at the origin, the process for dilation is different!!!

Example: Dilate $\triangle ABC$ by a scale factor of $\frac{1}{2}$ using $(2, 4)$ as the center of dilation.



Process:

- Plot the center of dilation on the coordinate plane.

center $(2, 4)$

- Determine the coordinates of one preimage point.

- From the center point to your preimage point, determine the horizontal change (x)

From center $(2, 4)$ to A $(-8, 2)$:

to get from 2 to -8 : subtract 10 : $x-10$

- From the center point to your preimage point, determine the vertical change (y)

From center $(2, 4)$ to A $(-8, 2)$

to get from 4 to 2 : subtract 2 : $y-2$

- Multiply the horizontal and vertical change by the scale factor.

$$(x-10, y-2) \times \frac{1}{2} \Rightarrow (x-5, y-1)$$

- Using the new x and y values, plot your new point starting at the center point.

$$\text{From } (2, 4) \quad (2-5, 4-1) \Rightarrow \boxed{(-3, 3)A'}$$

- Repeat steps 2 – 4 for each point of the preimage to create the image.

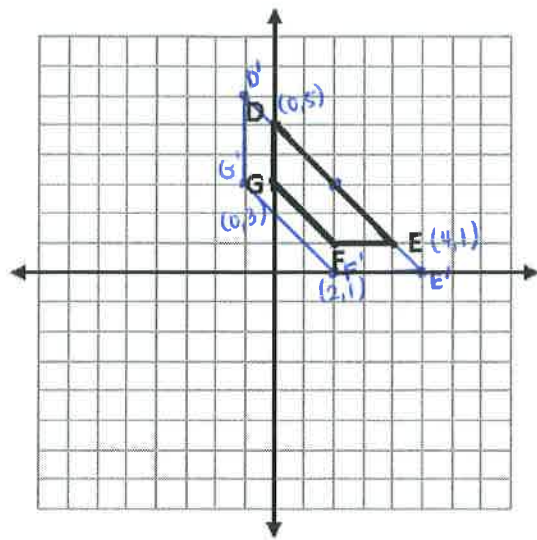
$$\begin{aligned} \text{From center } (2, 4) \text{ to } B(-2, 2): & (x-4, y-2) \times \frac{1}{2} \\ & (x-2, y-1) \end{aligned}$$

$$\text{From } (2, 4) : (2-2, 4-1) \Rightarrow \boxed{(0, 3)B'}$$

$$\begin{aligned} \text{From center } (2, 4) \text{ to } C(-4, -4): & (x-6, y-8) \times \frac{1}{2} \\ & (x-3, y-4) \end{aligned}$$

$$\text{From } (2, 4) : (2-3, 4-4) \Rightarrow \boxed{(-1, 0)C'}$$

Try this: Dilate trapezoid $DEFG$ using center $(2, 3)$ and scale factor of $3/2$.



$$D: \text{From } (2,3) \text{ to } (0,5) : (x-2, y+2) \times \frac{3}{2}$$

$$(x-3, y+3)$$

$$\text{From } (2,3) : (2-3, 3+3)$$

$$D'(-1, 6)$$

$$E: \text{From } (2,3) \text{ to } (4,1) : (x+2, y-2) \times \frac{3}{2}$$

$$(x+3, y-3)$$

$$\text{From } (2,3) : (2+3, 3-3)$$

$$E'(5, 0)$$

$$F: \text{From } (2,3) \text{ to } (2,1) : (x-0, y-2) \times \frac{3}{2}$$

$$(x-0, y-3)$$

$$\text{From } (2,3) : (2-0, 3-3)$$

$$F'(2, 0)$$

$$G: \text{From } (2,3) \text{ to } (0,3) : (x-2, y-0) \times \frac{3}{2}$$

$$(x-3, y-0)$$

$$\text{From } (2,3) : (2-3, 3-0)$$

$$G'(-1, 3)$$