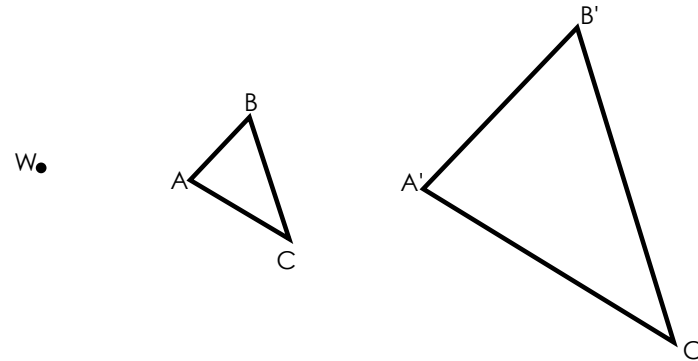


1.6 Dilations

Dilation is that thing eyes do when they see light - or your mom.

What is a Dilation?

A dilation is a transformation that produces an image that is the same shape as the original, but is a different size.

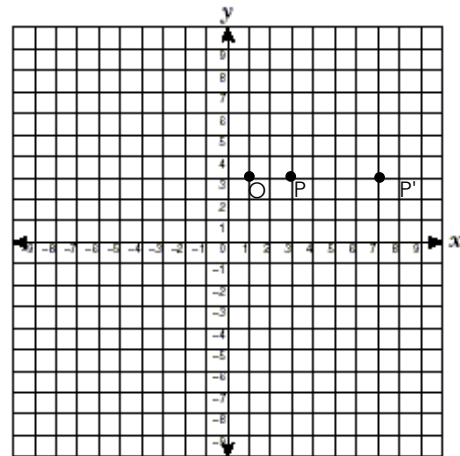


Key Dilations Vocabulary

Center of Dilation
Scale Factor

How Dilations Work

Dilations are a result of moving points away or toward a center of dilation.



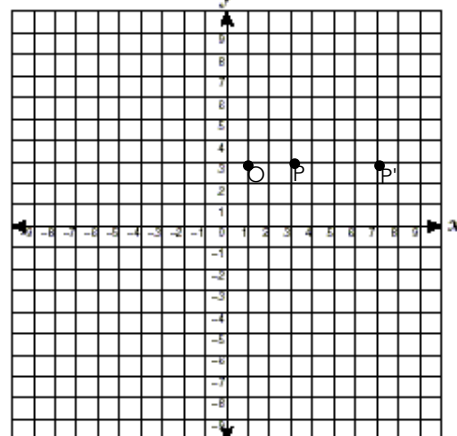
Center of Dilation

The point that the pre-image moves either away from or towards.

What is the center of dilation in the transformation to the left?

Scale Factor

The amount by which the image either grows or shrinks



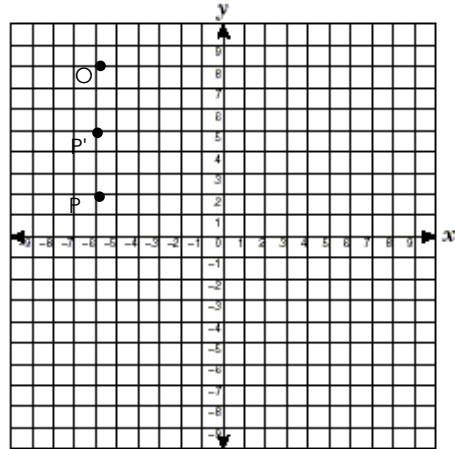
To find the scale factor use the following formula

$$k = \frac{\text{Distance from Image}}{\text{Distance from Pre-Image}}$$

$$k = \frac{(\quad)}{(\quad)}$$

$$k = \underline{\quad}$$

Find the scale factor of the dilation, centered at point O, that maps point P onto P'



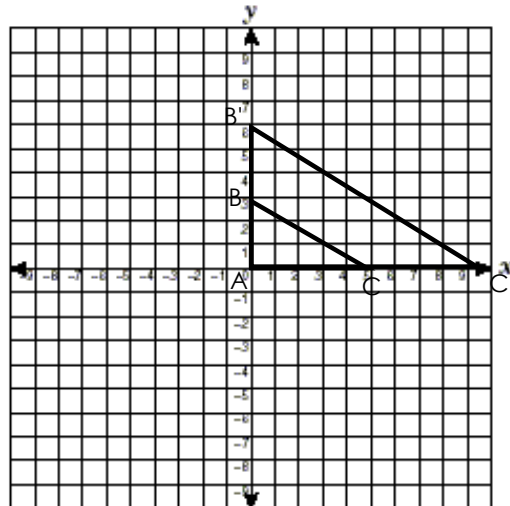
Scale Factor

$$k = \frac{\text{Distance from Image}}{\text{Distance from Pre-Image}}$$

$$k = \frac{(\quad)}{(\quad)}$$

$$k = \underline{\quad}$$

Find the scale factor of the dilation, centered at point A, that maps $\triangle ABC$ onto $\triangle A'B'C'$



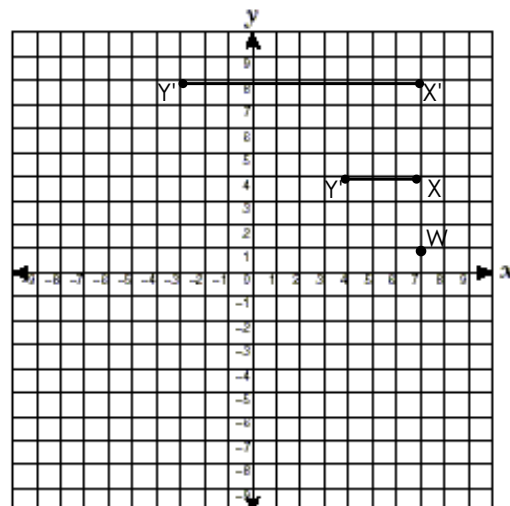
Scale Factor

$$k = \frac{\text{Distance from Image}}{\text{Distance from Pre-Image}}$$

$$k = \frac{(\quad)}{(\quad)}$$

$$k = \underline{\quad}$$

Find the scale factor of the dilation, centered at point W, that maps \overline{XY} on $\overline{X'Y'}$



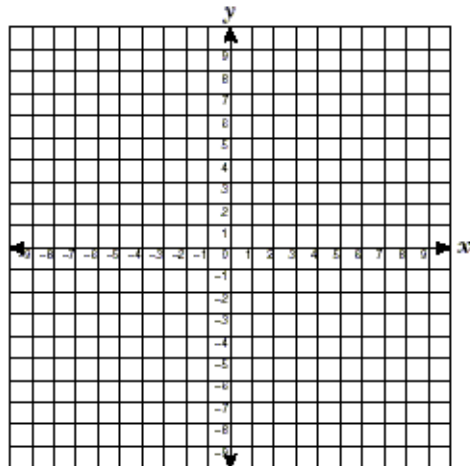
Scale Factor

$$k = \frac{\text{Distance from Image}}{\text{Distance from Pre-Image}}$$

$$k = \frac{(\quad)}{(\quad)}$$

$$k = \underline{\quad}$$

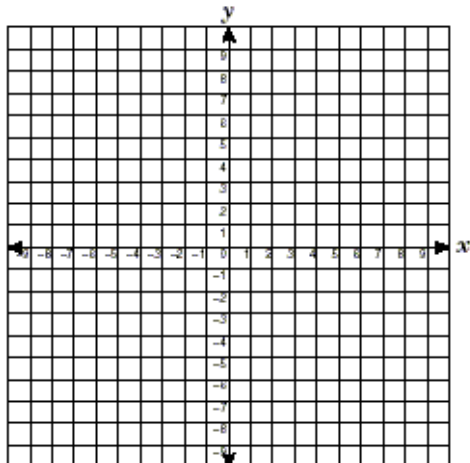
$\triangle ABC$ has coordinates at $A(-3,1)$, $B(4,2)$ and $C(1,4)$ What are the coordinates of $\triangle ABC$ after a dilation **centered at the origin** with a **scale factor of 2** ?



$A(\underline{\quad}, \underline{\quad})$	\longrightarrow	$A'(\underline{\quad}, \underline{\quad})$
$B(\underline{\quad}, \underline{\quad})$	\longrightarrow	$B'(\underline{\quad}, \underline{\quad})$
$C(\underline{\quad}, \underline{\quad})$	\longrightarrow	$C'(\underline{\quad}, \underline{\quad})$

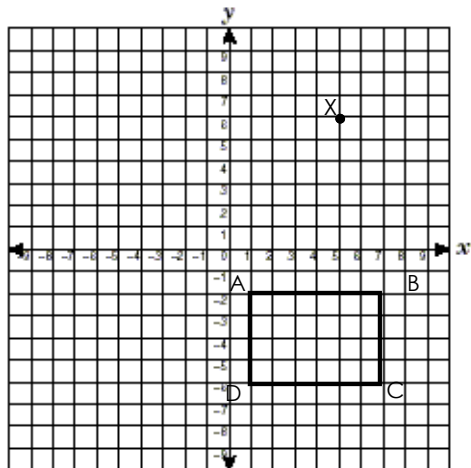
This a rigid transformation? Explain how you know

\overline{XY} has points $X(-5,-1)$ and $Y(-1,-4)$. State the coordinates of $\overline{X'Y'}$ after a dilation **centered at $P(-6,-5)$** with a **scale factor of 3**.



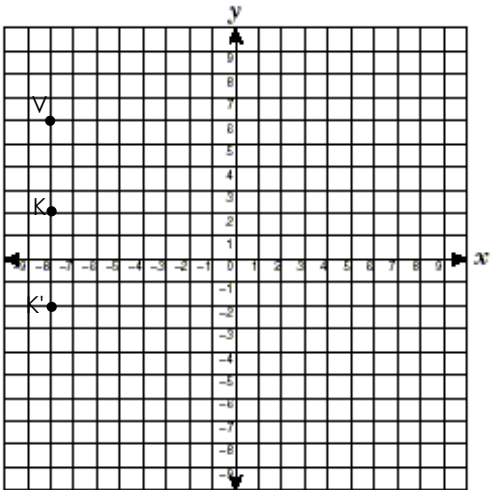
$X(\underline{\quad}, \underline{\quad})$	\longrightarrow	$X'(\underline{\quad}, \underline{\quad})$
$Y(\underline{\quad}, \underline{\quad})$	\longrightarrow	$Y'(\underline{\quad}, \underline{\quad})$

State the coordinates of rectangle $ABCD$ after a dilation of $\frac{1}{2}$ centered at point X



Independent Practice

Find the scale factor of the dilation, centered at point V, that maps K onto K'



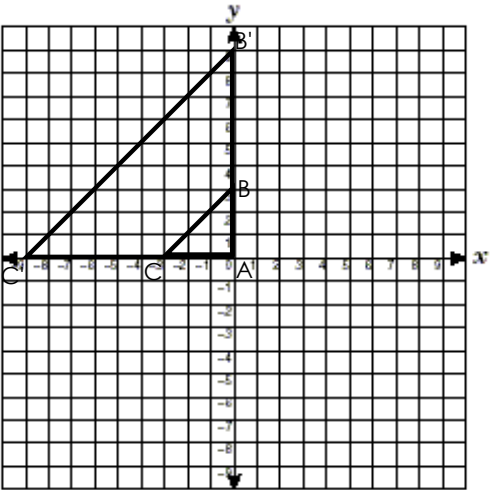
Scale Factor

$k = \frac{\text{Distance from Image}}{\text{Distance from Pre-Image}}$

$k = \frac{(\quad)}{(\quad)}$

$k = \underline{\quad}$

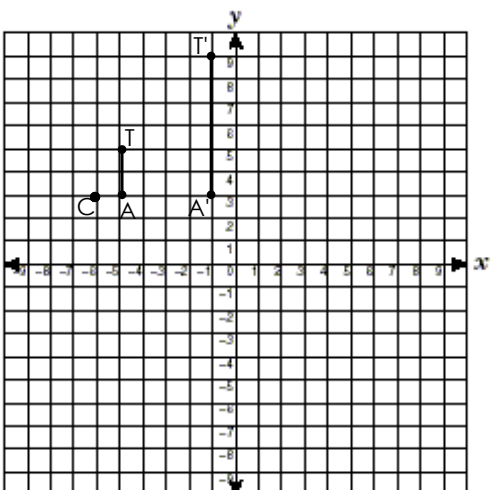
Find the scale factor of the dilation, centered at point A, that maps $\triangle ABC$ onto $\triangle A'B'C'$



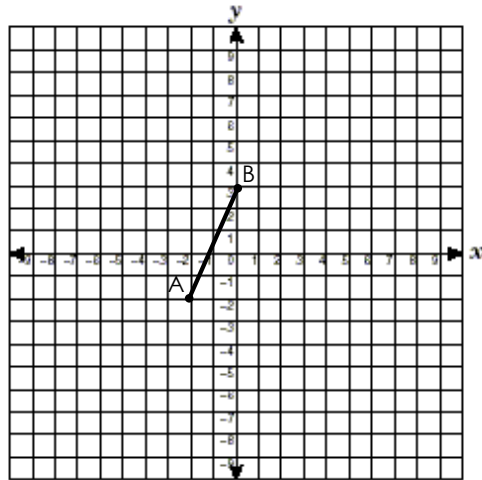
Scale Factor

$k = \frac{\text{Distance from Image}}{\text{Distance from Pre-Image}}$

Find the scale factor of the dilation, centered at point C, that maps \overline{AT} on $\overline{A'T'}$

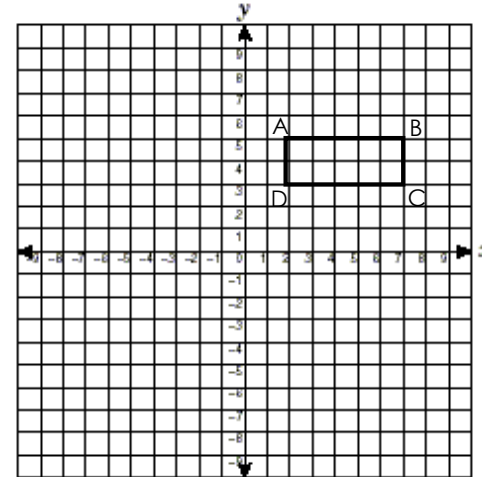


Scale Factor



What are the coordinates of line \overline{AB} after a dilation centered at the origin with a scale factor of 3?

Is this a rigid transformation? Explain your answer.



What are the coordinates of rectangle ABCD after a dilation centered at (5,7) with a scale factor of 2?

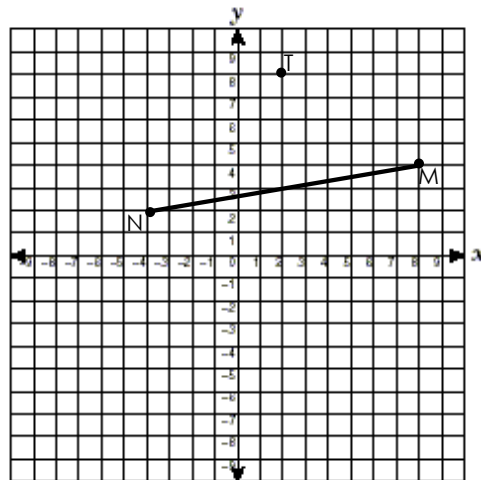
A(____,____) \longrightarrow A'(____,____)

B(____,____) \longrightarrow B'(____,____)

C(____,____) \longrightarrow C'(____,____)

D(____,____) \longrightarrow D'(____,____)

Is this a rigid transformation? Explain your answer.



What are the coordinates of line \overline{NM} after a dilation centered at point T with a scale factor of $\frac{1}{2}$?

