2.9 Dilations and Scale Factor

Dilations and Scale Factor

Vocab:

Dilation - A transformation that can change the size of a polygon but leaves the shape unchanged.

Center of Dilation - The fixed point about which all other points are transformed by a dilation

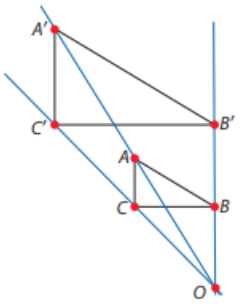
Scale Factor - The ratio of lengths of corresponding sides in the image and the preimage

Similarity Transformation - A transformation in which an image has the same shape as its pre-image

Similar Figures - A figure can be mapped to the other through one or more similarity transformation.

A similarity transformation is the opposite of what kind of transformation?

Determine the Scale Factor



Scale Factor:

$\frac{OA'}{OA}$ =

OA = 25 mm OA' = 50 mm

OB = 13 mm OB' = 26 mm

OC = 19 mm OC' = 38 mm

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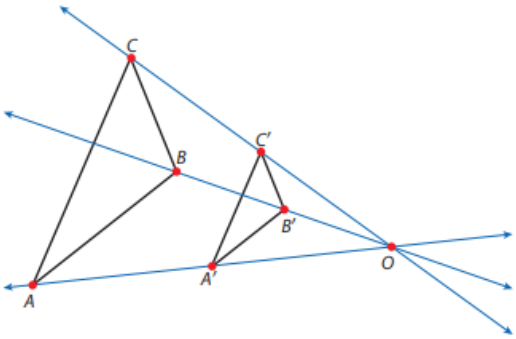
Determine the Scale Factor



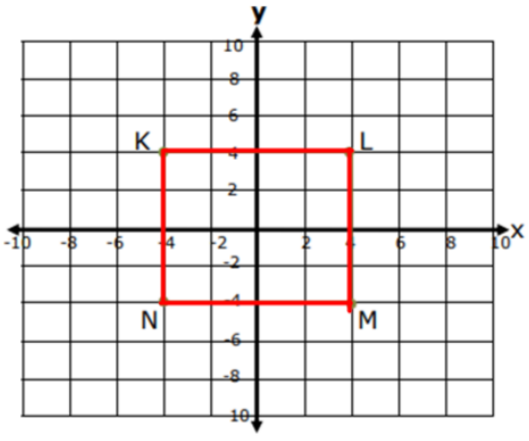
Scale factor:

OA = 60 mm OA' = 30 mm

OB = 38 mm OB' = 19 mm

OC = 52 mm OC' = 26 mm

Applying Scale Factor:



The scale factor is 2. What are the resulting coordinates?

K':

L':

M':

N':

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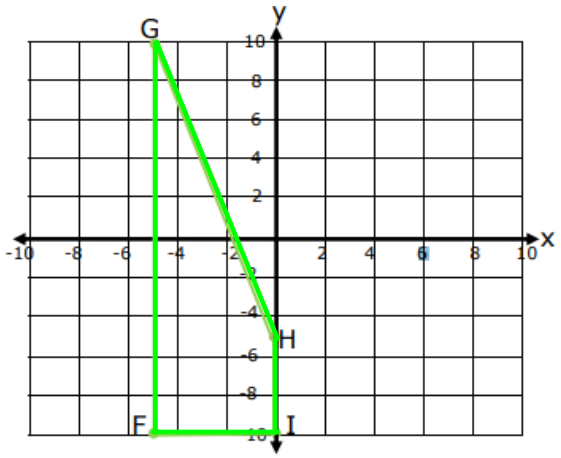
Applying Scale Factor:



The scale factor is 1/5. What are the resulting coordinates?

F':

G':

H':

I':

Scale Factor

What does k stand for?

Function rule for dilations:

$(x,y) \longrightarrow (kx, ky)$

If $0 < k < 1$, then it is a reduction.

If, $k > 1$, then it is an enlargement.

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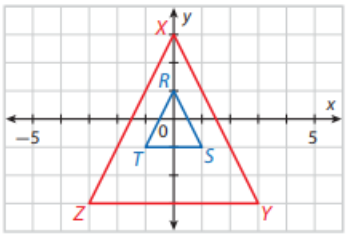
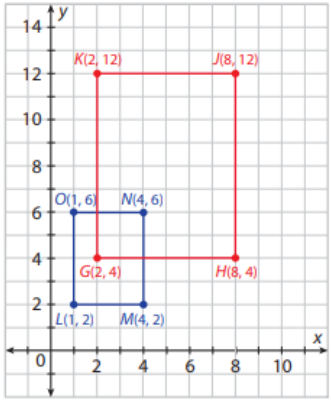
Practice:



Pre-image	Image
$R(0, 1)$	$X(0, 3)$
$S(1, -1)$	$Y(3, -3)$
$T(-1, -1)$	$Z(-3, -3)$

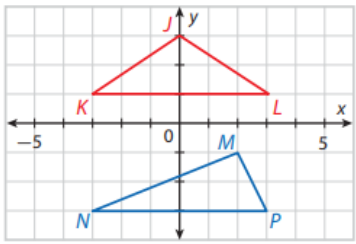
1. What is k?
2. What is the function rule?

Practice



Are these figures similar?

What is the function rule?



Are these figures similar?

What is the function rule?

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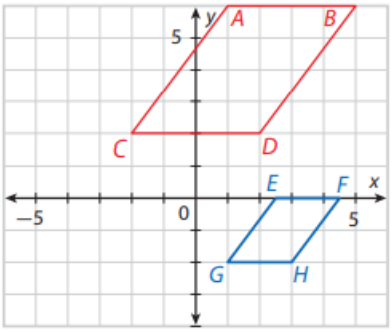
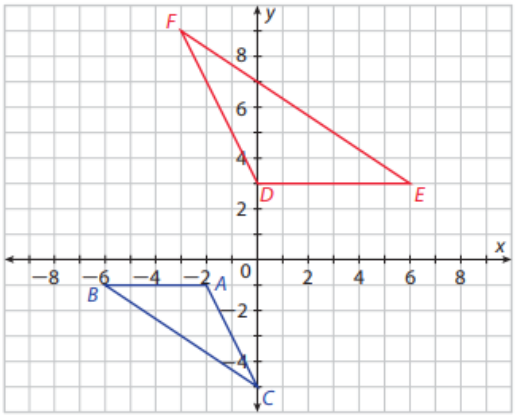
Sequence of Transformations



Apply the following transformations to map *ABCD* to *EFGH.*

Original Coordinates				
k = 1/2				
$T_{2,-3}$				

Practice:



List what transformations took place to map *ABC* to *DEF:*

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Circles

Circle Similarity Theorem

All circles are similar.