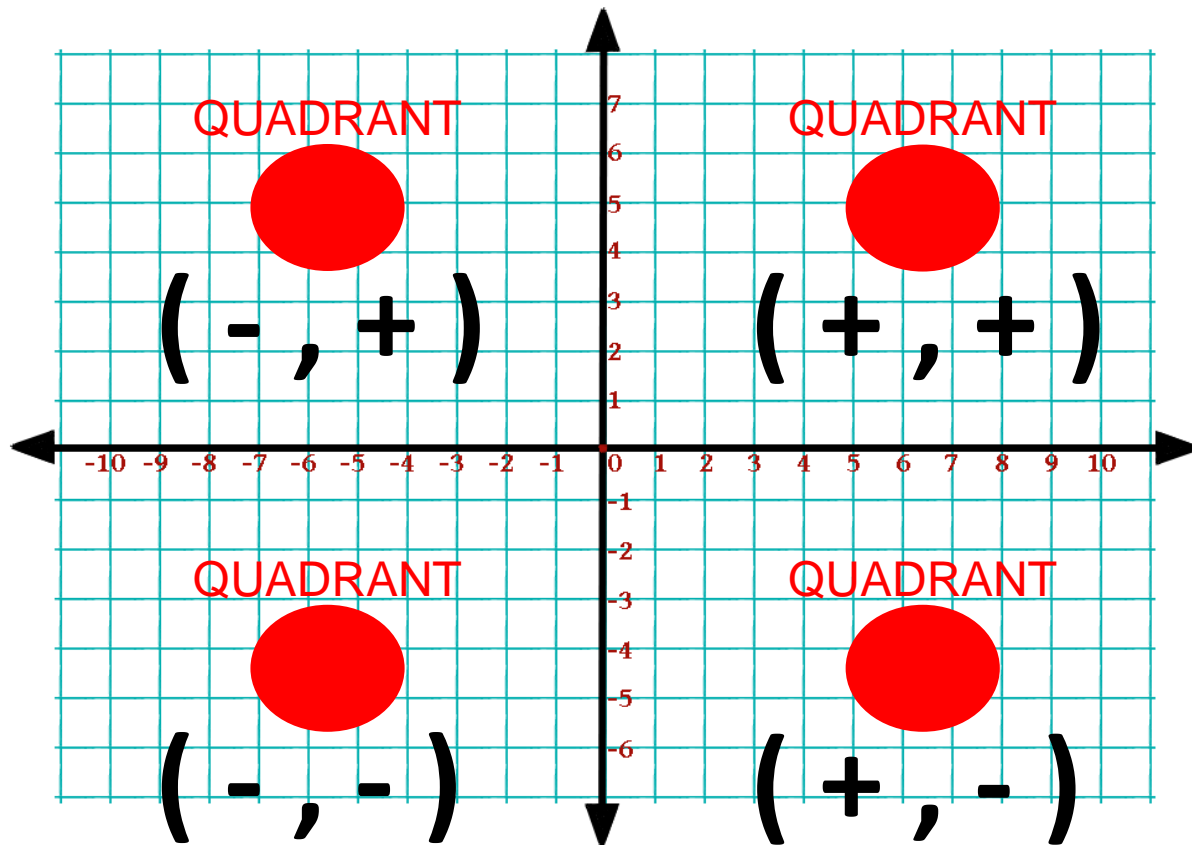


We will use Dilations¹ to show Proportional Relationships on a Coordinate Plane.

Activate Prior Knowledge

Identify each of the four quadrants. Describe what relationship exists between their ordered pairs (x , y).



CFU

What are we going to learn?
What does *dilation* mean?
Dilation means _____
_____.

Make Connection

Students, you already know how to plot points onto a number line. Now, we will use that skill to identify figures on coordinate planes.

Vocabulary

¹ enlargements or reductions in size

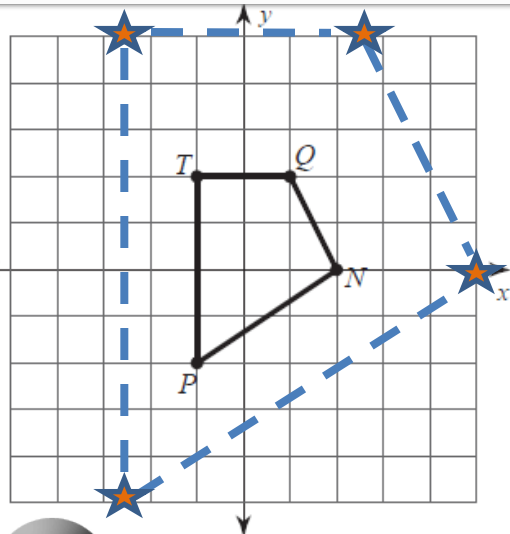
Dilations show us enlargements or reductions. Follow the directions given below:

1. Find your original coordinates for the pre-image (the original figure).
2. Multiply the factor of dilation by the original coordinates, then plot the points AND graph the new figure.

EXAMPLE:

DILATION OF 2.5

1. Find the coordinates of the original figure.
2. Multiply by the factor of dilation by the original figure's coordinates (in this case – multiply by 2.5).
3. Write your new ordered pairs (New Figure).
4. Plot the points and connect each point to create your new figure.

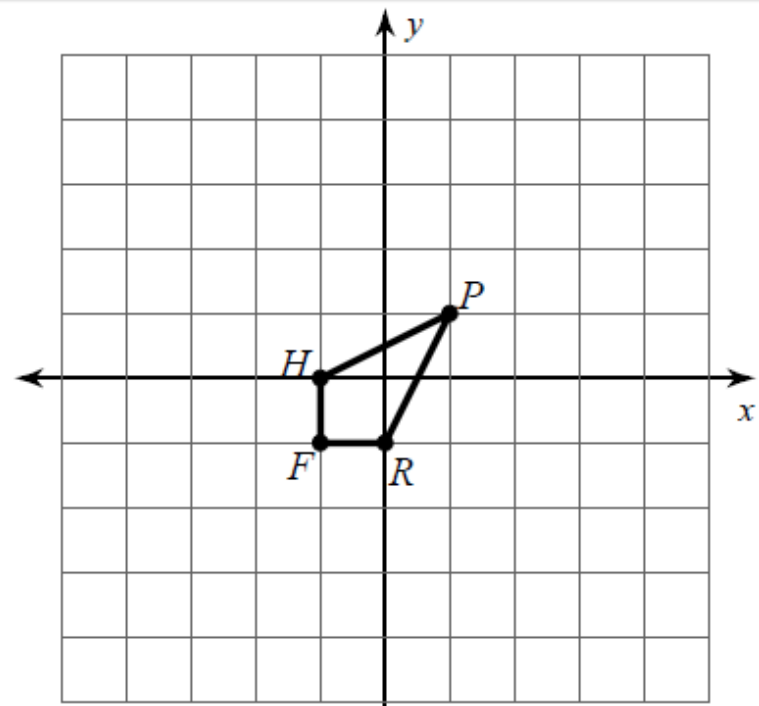


Original Figure



New Figure

T	(-1 , 2)	x 2.5	T'	(-2.5 , 5)
Q	(1 , 2)	x 2.5	Q'	(2.5 , 5)
N	(2 , 0)	x 2.5	N'	(5 , 0)
P	(-1 , -2)	x 2.5	P'	(-2.5 , -5)



DILATION OF 4.5

Original Figure



New Figure

P	(,)	P'	(,)
R	(,)	R'	(,)
F	(,)	F'	(,)
H	(,)	H'	(,)

INTERPRETING YOUR GRAPH: Because the dilation is greater than 1, your new image will be larger than the original, in this case 2.5 times the size of the original.

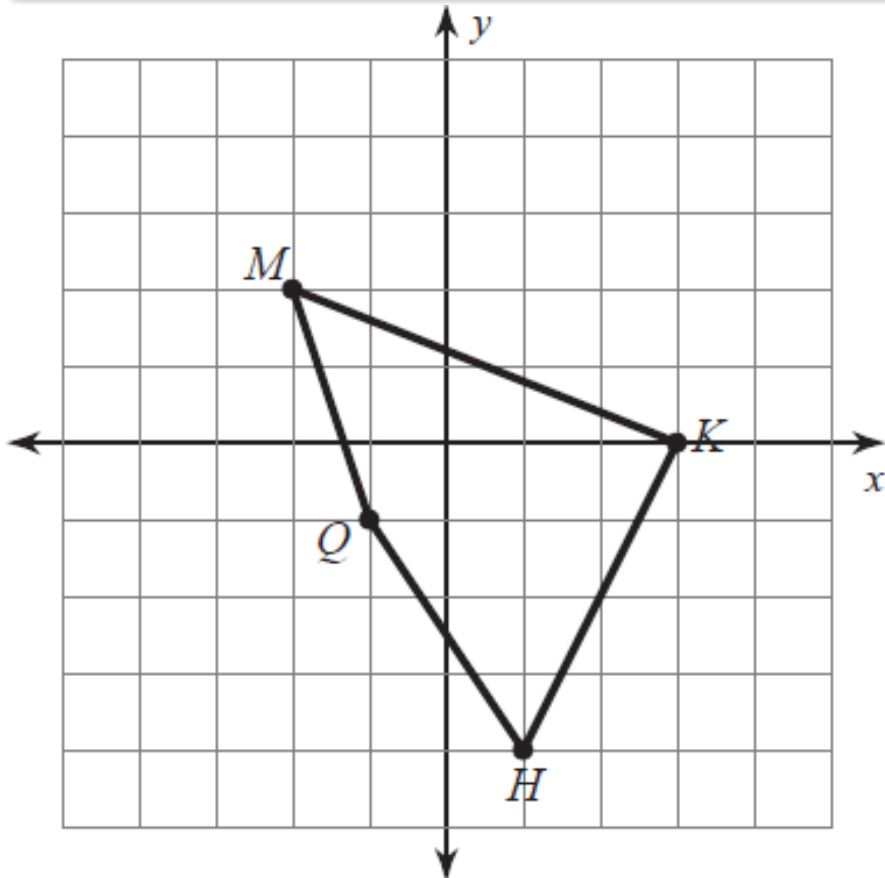
DILATIONS enlarge or reduce the size of a figure. We can manipulate ordered pairs based on the dilation given.

DILATIONS greater than 1 will make a figure larger, while dilations less than one will make a figure smaller.

Review from 1/6/17

Identify the points given on a coordinate plane.

- 1 Write ordered pairs for the each point shown.
- 2 Apply the factor of the dilation to the ordered pairs.
- 3 Identify and plot the new points, then sketch the figure.



DILATION OF 0.5

ORIGINAL FIGURE

M (,)

K (,)

H (,)

Q (,)



NEW FIGURE

M' (,)

K' (,)

H' (,)

Q' (,)

Because the dilation is _____ than 1, our new image will be _____ than the original, in this case _____ the size of the original.

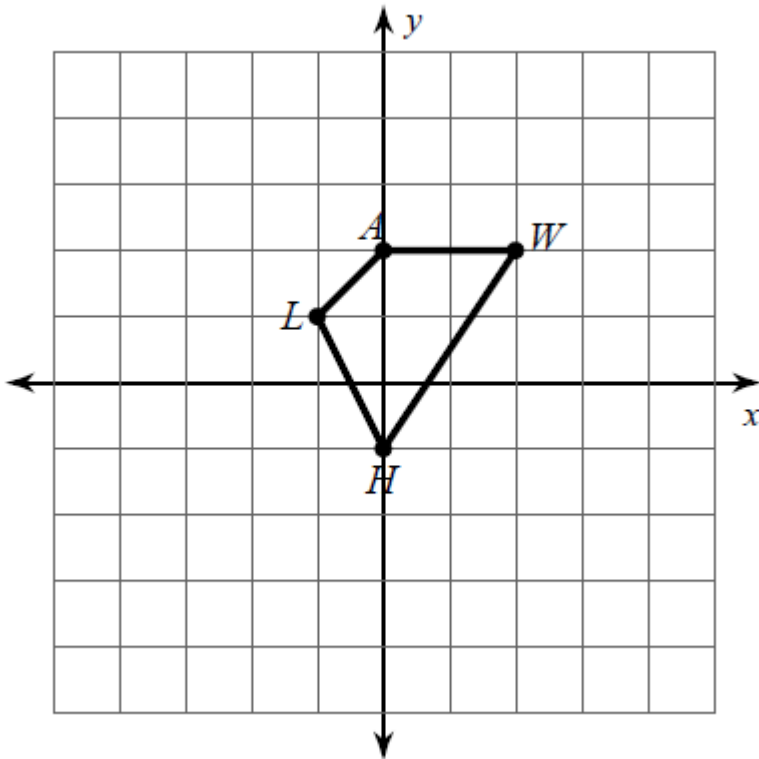
DILATIONS enlarge or reduce the size of a figure. We can manipulate ordered pairs based on the dilation given.

DILATIONS greater than 1 will make a figure larger, while dilations less than one will make a figure smaller.

Review from 1/6/17

Identify the points given on a coordinate plane.

- 1 Write ordered pairs for the each point shown.
- 2 Apply the factor of the dilation to the ordered pairs.
- 3 Identify and plot the new points, then sketch the figure.



DILATION OF 2

ORIGINAL FIGURE

A (,)

W (,)

H (,)

L (,)

NEW FIGURE

A' (,)

W' (,)

H' (,)

L' (,)



Because the dilation is _____ than 1, our new image will be _____ than the original, in this case _____ the size of the original.

DILATIONS enlarge or reduce the size of a figure. We can manipulate ordered pairs based on the dilation given.

DILATIONS greater than 1 will make a figure larger, while dilations less than one will make a figure smaller.

Ordered Pair

(2, 3)
x and y

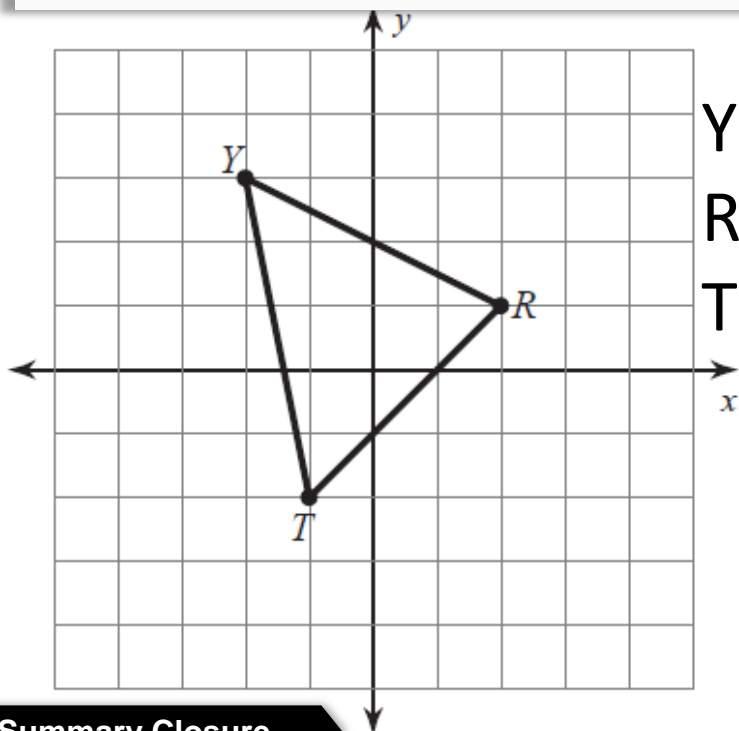
CFU

Which operations are used in dilations?

- A. Addition
- B. Subtraction
- C. Multiplication
- D. Division

Identify the points given on a coordinate plane.

- 1 Write ordered pairs for the each point shown.
- 2 Apply the factor of the dilation to the ordered pairs.
- 3 Identify and plot the new points, then sketch the figure.



DILATION OF 0.5

Y (-2 , 3)	Y' (-1 , 1.5)
R (2 , 1)	R' (1 , 0.5)
T (-1 , -2)	T' (-0.5 , -1)

Because the dilation is less than 1, our new image will be smaller than the original, in this case $\frac{1}{2}$ the size of the original.

Word Bank

coordinates
ordered pair
dilation
quadrant
point
plot
enlargement
reduction
factor
scale factor

Summary Closure

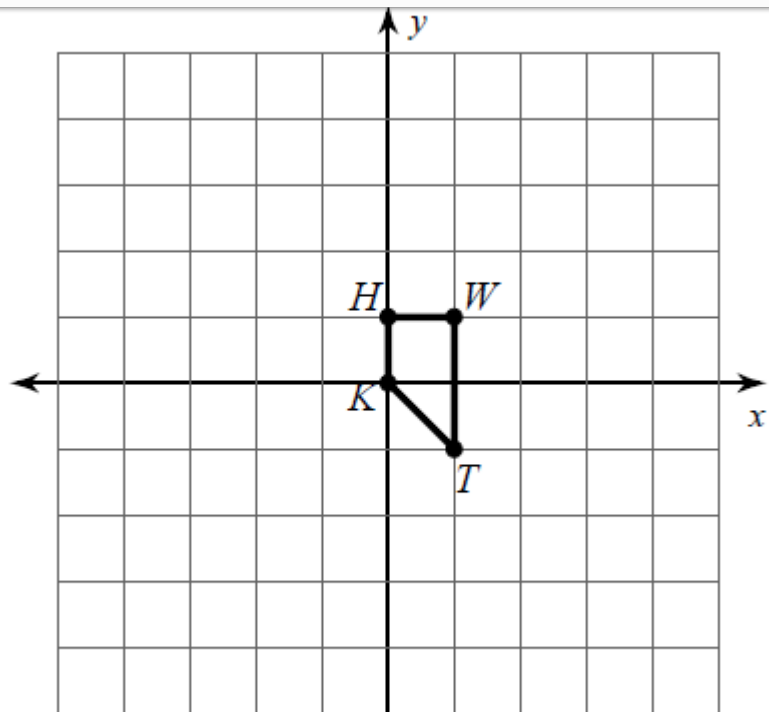
What did you learn today about dilations / plotting and locating points on a coordinate plane?

(Pair-Share)

Use words from the word bank.

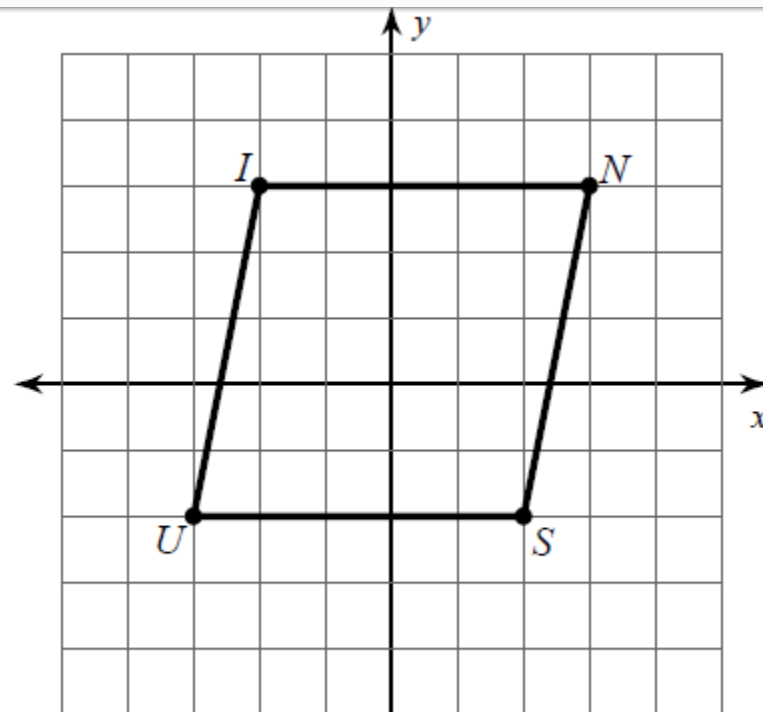
Dilations show us enlargements or reductions.

1. Find your original coordinates for the pre-image (the original drawing).
2. Multiply the factor of dilation by the original coordinates, then plot the points.



DILATION OF 3

H (0 , 1) → H' (,)
K (0 , 0) K' (,)
W (1 , 1) W' (,)
T (1 , -1) T' (,)

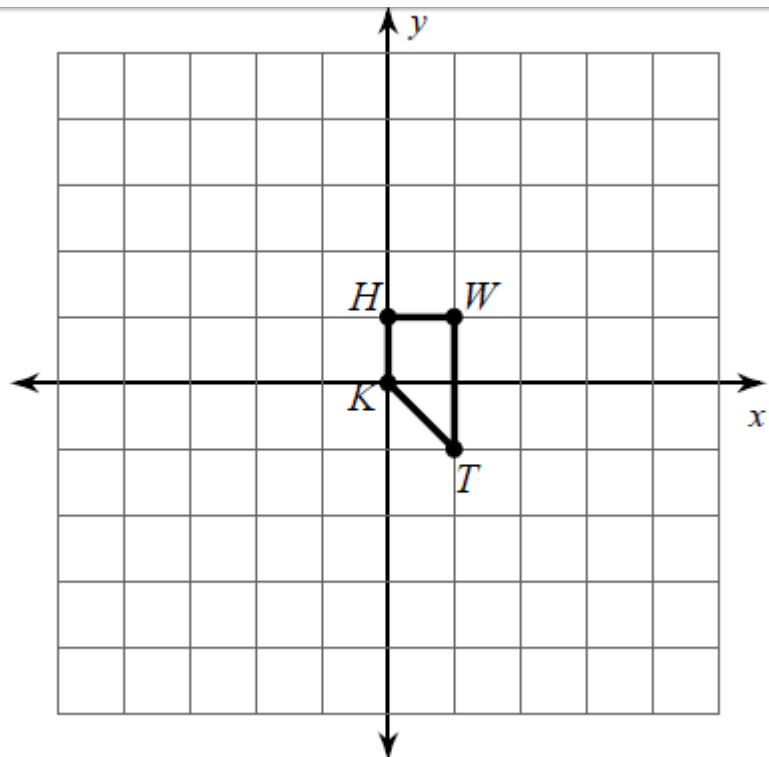


DILATION OF 0.5

I (,) → I' (,)
N (,) N' (,)
S (,) S' (,)
U (,) U' (,)

Dilations show us enlargements or reductions.

1. Find your original coordinates for the pre-image (the original drawing).
2. Multiply the factor of dilation by the original coordinates, then plot the points.



DILATION OF 4.5

Original Figure

H (1 , 1)

K (1 , 0)

W (2 , 1)

T (2 , -1)



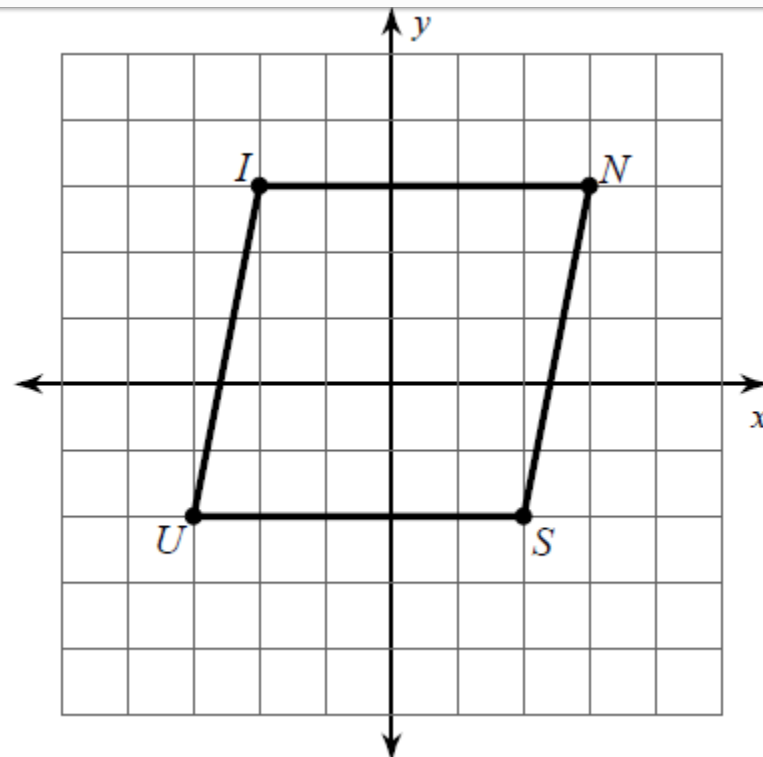
New Figure

H' (4.5 , 4.5)

K' (4.5 , 0)

W' (9 , 4.5)

T' (9 , -4.5)



DILATION OF 1.5

Original Figure

I (-2 , 3)

N (3 , 3)

S (3 , -2)

U (-2 , -2)



New Figure

I' (-3 , 4.5)

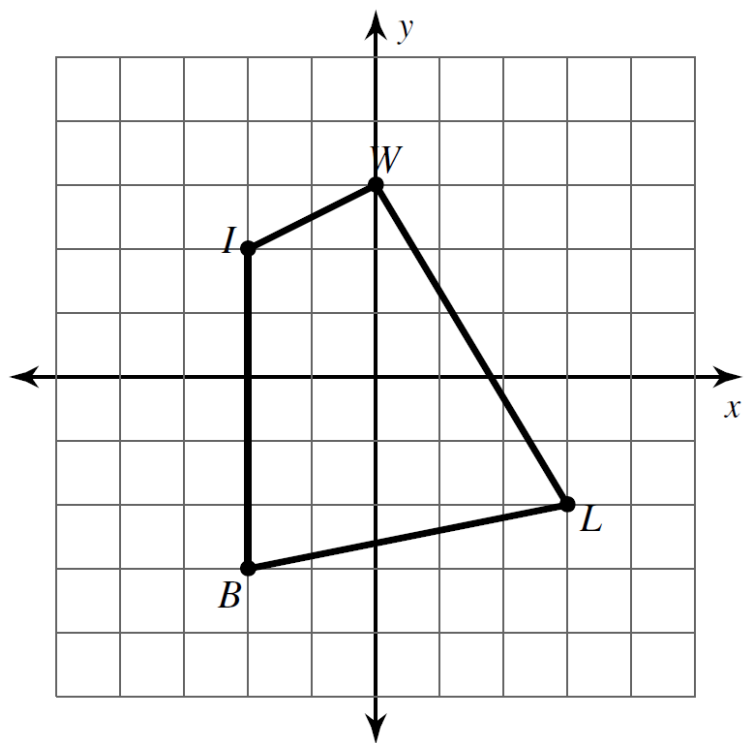
N' (4.5 , 4.5)

S' (4.5 , -3)

U' (-3 , -3)

Dilations show us enlargements or reductions.

1. Find your original coordinates for the pre-image (the original drawing).
2. Multiply the factor of dilation by the original coordinates, then plot the points.



DILATION OF 0.5

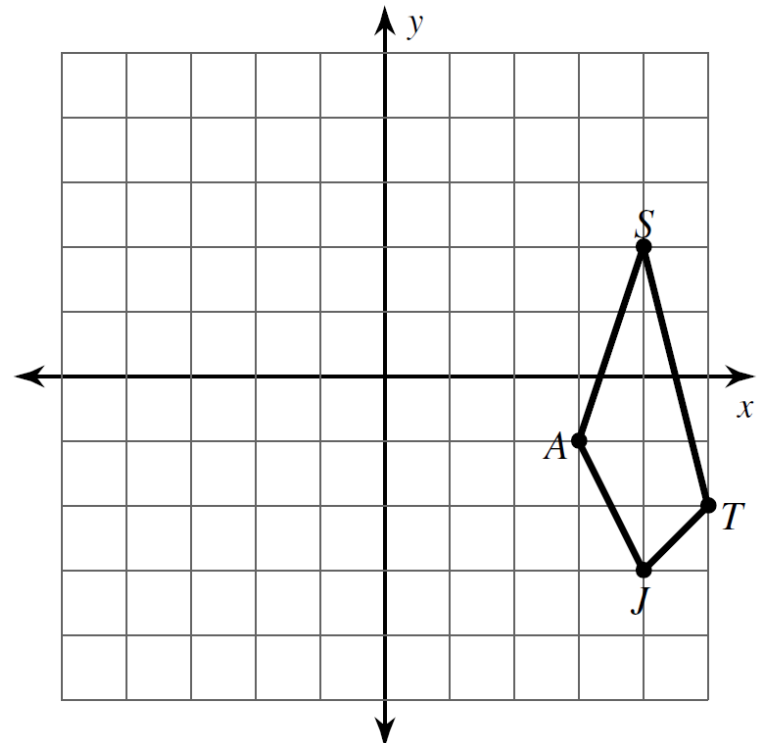
Original Figure

New Figure

W (0 , 3)
 I (-2 , 2)
 B (-2 , -1)
 L (3 , -2)



W' (0 , 1.5)
 I' (-1 , 1)
 B' (-1 , -0.5)
 L' (1.5 , -1)



DILATION OF 1/2

Original Figure

New Figure

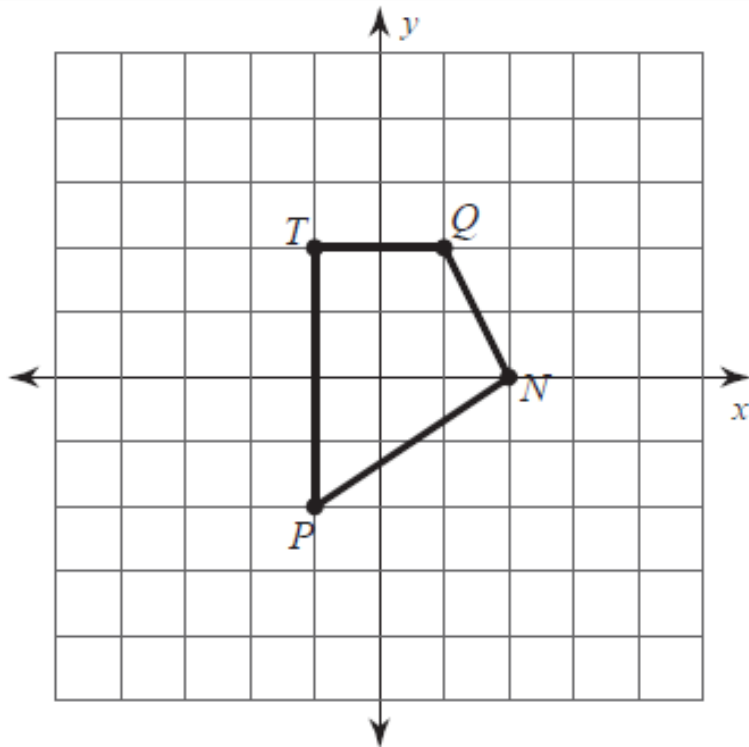
S (1 , 2)
 A (0 , 0)
 J (1 , -1)
 T (2 , -1)



S' (0.5 , 1)
 A' (0 , 0)
 J' (0.5 , -0.5)
 T' (1 , -0.5)

Dilations show us enlargements or reductions.

1. Find your original coordinates for the pre-image (the original drawing).
2. Multiply the factor of dilation by the original coordinates, then plot the points.

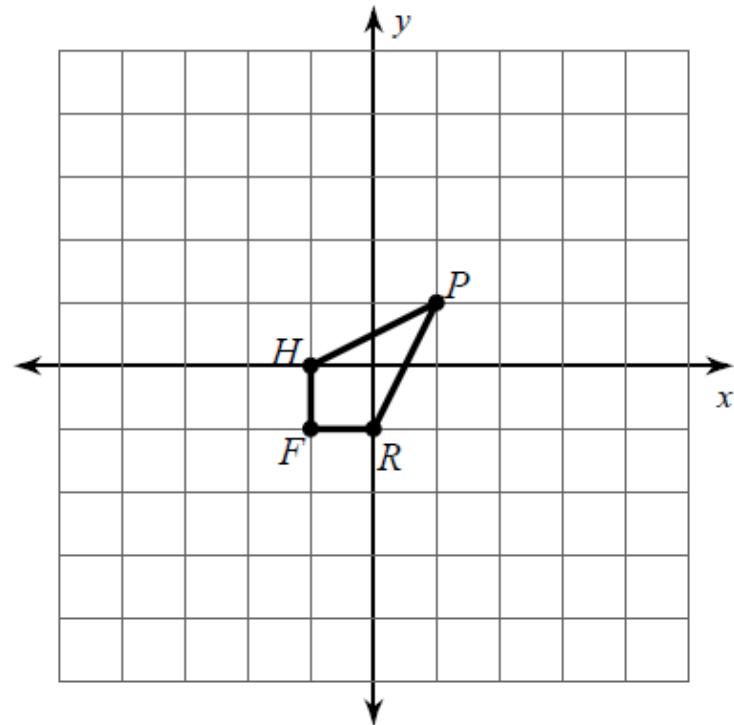


DILATION OF 2

Original Figure

New Figure

T (,)	→	T' (,)
Q (,)		Q' (,)
N (,)		N' (,)
P (,)		P' (,)



DILATION OF 3

Original Figure

New Figure

P (,)	→	P' (,)
R (,)		R' (,)
F (,)		F' (,)
H (,)		H' (,)