**Geometry
Notes 12.7 Dilations**

**Definitions:**

1.) **dilations**-A transformation where the preimage and image are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It is not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the size of an image.

2.) **enlargement**- to make an image \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Scale factor will be \_\_\_\_\_\_\_\_\_\_ than 1.

3.) **reduction**- to make an image \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Scale factor will be \_\_\_\_\_\_\_\_ than 1.

**![[image]]()Examples of dilations:
Example #1:**

A(6,5), B(1,1), C(8,3)

Use matrices to fine the image under the dilation centered at the origin with a scale factor of .5

**C**

**B**

**A**

Fill in the coordinates of A’, B’ and C’ below:
A’ (\_\_\_\_\_,\_\_\_\_\_), B’ (\_\_\_\_\_,\_\_\_\_\_), C’ (\_\_\_\_\_,\_\_\_\_\_)

**Example #2:**

![[image]]()

M(-7,6), X(2,6), Z(-3,2), Y(-9,1)

**Z**

**Y**

**X**

**M**

Use matrices to fine the image under the dilation centered at the origin with a scale factor of 1.5.

Fill in the coordinates for the new image.
M’ (\_\_\_\_\_,\_\_\_\_\_), X’ (\_\_\_\_\_,\_\_\_\_\_),
 Z’ (\_\_\_\_\_,\_\_\_\_\_), Y’ (\_\_\_\_\_,\_\_\_\_\_)

**Example #3:**

Use scalar multiplication to find the image of ΔPQR got s dilation with center (0,0) and the given scale factor.
 P Q R

 x-coordinate 3 2 -4

 y-coorinate -1 6 9

 Scale factor 1/3