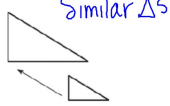
Geometry Notes Section 9-7 **May 21**

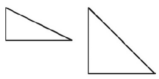
Dilations

A dilation is a transformation that changes the size of a figure but not the shape.

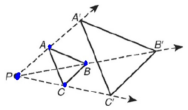
Dilation Similar △s



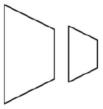
Not a Dilation

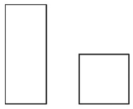


A dilation is a transformation in which the lines connecting every point A with its image A' all intersect at point P, called the **center of dilation**.



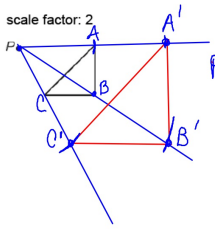
Tell whether each transformation appears to be a dilation.

1.  yes. Dilation

2.  Not a dilation.

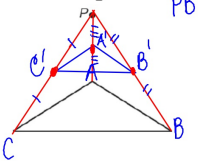
Draw the image of the triangle under a dilation with the given scale factor.

3. scale factor: 2



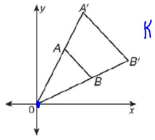
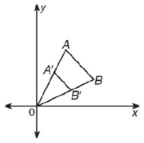
$PA' = 2(PA)$

4. scale factor: $\frac{1}{2}$



$PB' = \frac{1}{2}(PB)$

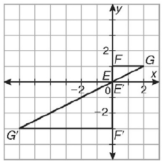
Dilations in the Coordinate Plane

For $k > 1$	For $0 < k < 1$
	
$(x, y) \rightarrow (kx, ky)$	$(x, y) \rightarrow (kx, ky)$

K = scale factor

If k has a negative value, the preimage is rotated by 180°.

Draw the image of △*EFG* with vertices *E*(0, 0), *F*(0, 1), and *G*(2, 1) under a dilation with a scale factor of –3 and centered at the origin.



The image of (x, y) is $(-3x, -3y)$.

$E(0, 0) \rightarrow E'(0, 0)$

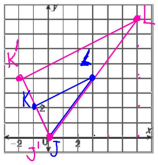
$F(0, 1) \rightarrow F'(0, -3)$

$G(2, 1) \rightarrow G'(-6, -3)$

Graph the preimage and image.

Draw the image of the figure with the given vertices under a dilation with the given scale factor and centered at the origin.

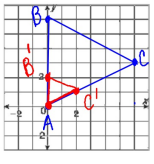
5. $J(0, 0)$, $K(-1, 2)$, $L(3, 4)$; scale factor: 2



$J'(0,0)$
$K'(-2,4)$
$L'(6,8)$

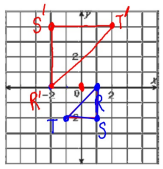
6. $A(0, 0)$, $B(0, 6)$, $C(6, 3)$; scale factor: $\frac{1}{3}$

$(\frac{1}{3}6, \frac{1}{3}3)$



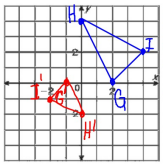
$A'(0,0)$
$B'(0,2)$
$C'(2,1)$

7. $R(1, 0)$, $S(1, -2)$, $T(-1, -2)$; scale factor: -2



$R'(-2,0)$
$S'(-2,4)$
$T'(2,4)$

8. $G(2, 0)$, $H(0, 4)$, $I(4, 2)$; scale factor: $-\frac{1}{2}$



$G'(-1,0)$
$H'(0,-2)$
$I'(-2,-1)$