LESSON DIGITS 10-1
Dilations

3/26/2019

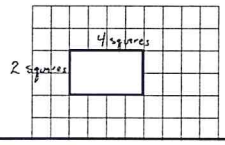
(1)

Goal: I will be able to **make a figure larger or smaller.**

Text Help: Formulas, equations, Vocabulary, etc.

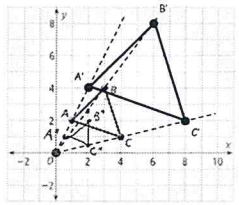
Here's How - Notes & Examples

An artist wants to make a drawing of a canvas that is 2' x 4' on the grid paper. Did the artist layout the canvas correctly?



(2)

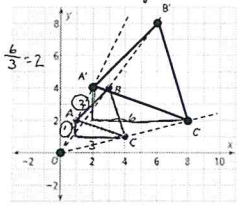
Dilation	is a transformation of a shape that makes it bigger or smaller
Example	



(3)

Scale Factor	is the ratio of a side of the new shape compared to the original scale factor = $\frac{\text{new}}{\text{original}}$
Example	

Scale Factor $= \frac{2}{1} = \frac{6}{3} = 2$



(4)

Example 1	Which graph shows a dilation?

I. No, because the scale factor is $\frac{1}{1} = 1$ no change

II. No, because both did not change by the same scale factor

III. Yes, because all sides changed by the same scale factor $= \frac{3}{1} = \frac{6}{2} = 3$

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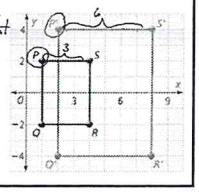
Types of Dilations	
Enlargements	has a scale factor > 1
Reductions	has a scale factor < 1
Example 2	
What type of dilation is this?	A. Enlargement
What is the scale factor?	A. S.F. $= \frac{\text{new}}{\text{orig}} = \frac{6}{3} = 2$



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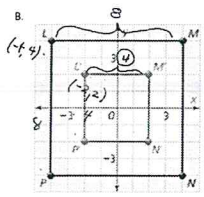
Example 2	
What type of dilation is this?	B. Reduction
What is the scale factor?	S.F. $= \frac{\text{new}}{\text{orig}} = \frac{4}{8} = \frac{1}{2}$



(7)

Finding the coordinates after a dilation.	multiply the coordinates by the scale factor $P(1,2) \xrightarrow{\times 2} P'(1\cdot 2, 2\cdot 2) \rightarrow P'(2,4)$
Example 3	The vertices of $\triangle ABC$ are A(1,2), B(−2,1), and C(−1,−1). Use arrow notation to find the coordinates of A', B', and C' after a dilation with center (0,0) and a scale factor of 3. $A(1,2) \xrightarrow{\times 3} A'(3,6)$ $B(-2,1) \xrightarrow{\times 3} B'(-6,3)$ $C(-1,-1) \xrightarrow{\times 3} C'(-3,-3)$

(8)

Example 4	The vertices of $\triangle MNO$ are M(8,4), N(4,−4), and O(0,0). $\triangle M'N'O'$ is the image of $\triangle MNO$ after a dilation with center (0,0) and scale factor of $\frac{3}{4}$. What are the coordinates of point M?
Try	$M(8,4) \xrightarrow{\times \frac{3}{4}} M'(6,3)$ $N(4,-4) \xrightarrow{\times \frac{3}{4}} N'(3,-3)$ $O(0,0) \xrightarrow{\times \frac{3}{4}} O'(0,0)$

B. $\frac{3}{4} = \frac{8}{x} \cdot 4x$