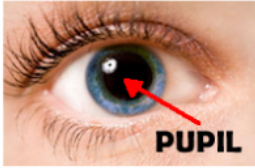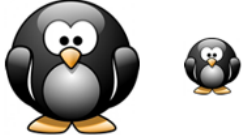Class-Notes: ~~Dilations~~

Date_____Period_____

Objective: I can describe dilations, calculate scale factors, find missing side measures.

*Essential Question:* *What is the effect of dilation on two dimensional figures?*

What is dilation? A dilation is a *transformation* that produces an *image* that is the same shape as the original, but is a ~~different size.~~	Real life example: Dilation is the term that is used to describe the enlarging or shrinking of our pupils. Pupils dilate either smaller (reduction) or larger (enlargement) depending on the amount of light that enters the eye.
What is a reduction? MAKES FIGURE SMALLER	Real life example:
What is an enlargement? MAKES FIGURE BIGGER	Real life example:

Pre-image: ORIGINAL (OLD) Image: COPY (NEW)

FIGURE BEFORE   FIGURE AFTER

TRANSFORMATION   TRANSFORMATION

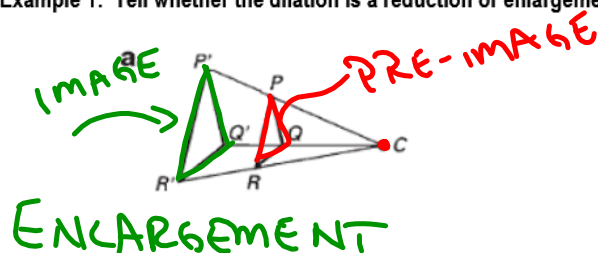How can we tell which one is the pre-image and which one is the image?

PRE-IMAGE LABEL → ∆ABC

IMAGE LABEL → ∆A'B'C'

Center of dilation: Fixed point from which the figure is reduced or enlarged.

Center of Dilation ⟶
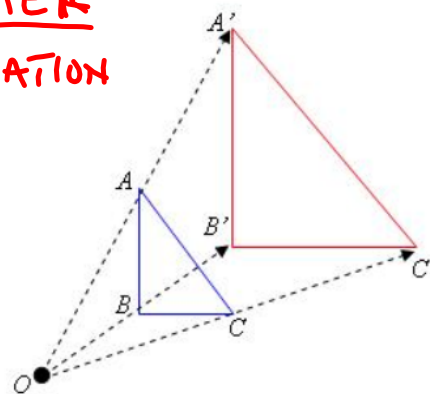
Example 1: Tell whether the dilation is a reduction or enlargement.

a.

IMAGE

PRE-IMAGE

ENLARGEMENT

b.

REDUCTION
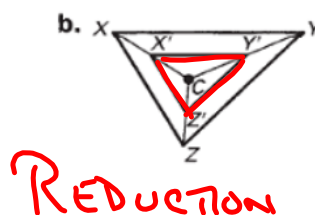
What is a scale factor?

Scale factor is the number we multiply by to either reduce or enlarge the size of a figure.

How is the scale factor of a dilation found?

Scale factor = $\dfrac{IMAGE}{PRE\text{-}IMAGE}$ or $\dfrac{COPY}{ORIGINAL}$ OR $\dfrac{NEW}{OLD}$

k = symbol for scale factor

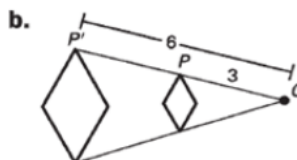| If the dilation is a reduction, the scale factor k, as a decimal, will be between 0 and 1.	If the dilation is an enlargement, the scale factor k, as a decimal, will be greater than 1.
$0 < k < 1$	$k > 1$
Reduction: $k = \dfrac{CP'}{CP} = \dfrac{3}{6} = \dfrac{1}{2}$	Enlargement: $k = \dfrac{CP'}{CP} = \dfrac{5}{2}$
Scale Factor 1:2, or k = .5	Scale Factor 5:2, or k = 2.5

2

Example 2: For part *a* and *b*, find the scale factor of the dilation.
Then tell whether the dilation is a reduction or enlargement and explain how you know.

a.

$$0 < \frac{2}{3} < 1$$
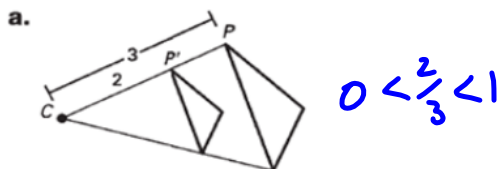
SCALE FACTOR : $\dfrac{\text{COPY}}{\text{ORIG.}} = \dfrac{2}{3}$

REDUCTION

b.
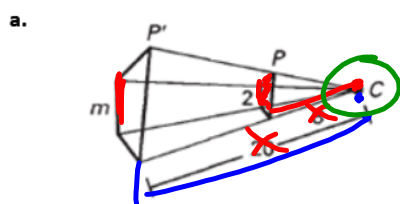

S.F = $\dfrac{6}{3} = \dfrac{2}{1}$

ENLARGEMENT

$K = 2$ so $K > 1$

Example 3: Find the value of the variable.
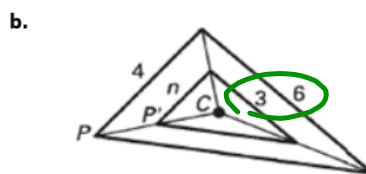Then tell whether the dilation is a reduction or enlargement and find the scale factor.

a.

SCALE FACTOR : $\dfrac{20}{8} = \dfrac{5}{2}$

$\dfrac{5}{2} = \dfrac{m}{2}$

$2m = 10$

$m = 5$

b.

S.F : $\dfrac{3}{6} = \dfrac{1}{2} = k$

$h = \left(\dfrac{1}{2}\right)(4) = 2$

Hw: 7.6 Practice A

3