**Name: Date:**

**TOPIC: SCALE FACTORS**

A **dilation** is a transformation in which a figure is enlarged or reduced with respect to a fixed point C called the **center of dilation** and a **scale factor**, k, which is the ratio of the lengths of the corresponding sides of the image and the preimage.

* When the scale factor k > 1, a dilation is an enlargement.
* When 0 < k < 1, a dilation is a reduction.

**Example:**

Find the scale factor of the dilation. Then tell whether the dilation is a *reduction* or an *enlargement*.



**Solution:**

Because $\frac{CP' }{CP}=\frac{12 }{8}$, the scale factor k = $\frac{3 }{2}$. So, the dilation is an *enlargement*.



**Solution:**

Because $\frac{CP' }{CP}=\frac{18 }{30}$, the scale factor k = $\frac{3 }{5}$. So, the dilation is a *reduction.*

**Real Life Example:**

You are making your own photo stickers. Your photo is 4 inches by 4 inches. The image on the stickers is 1.1 inches by 1.1 inches. What is the scale factor of this dilation?

**Solution:** The scale factor is the ratio of a side length of the sticker image to a side length of the original photo, or $\frac{1.1 in }{4 in}$

For questions #1-4, find the scale factor of the dilation. Then tell whether the dilation is a *reduction* or an *enlargement*.

1. 2.

.  

3. 4.

 

5. You receive wallet-sized photos of your school picture. The photo is 2.5 inches by 3.5 inches. You decide to dilate the photo to 5 inches by 7 inches at the store. What is the scale factor of this dilation? (Remember to ask yourself: “is this an enlargement or a reduction?”)

6. Your visulally impaired friend asked you to enlarge your notes from class so he can study. You took notes on 8.5-inch by 11-inch paper. The enlarged copy has a smaller side with a length of 10 inches. What is the scale factor of this dilation?

7. For each problem you are told if an enlargement or a reduction took place. Using that

 information, find the scale factor of the dilation. Then find the value of the variable.

1. Enlargement

 

1. Enlargement

 

1. Reduction



1. Reduction



8. Describe and correct the error in finding the scale factor

 a)

 

 b)

 

9.



10.



11.



12.



13.