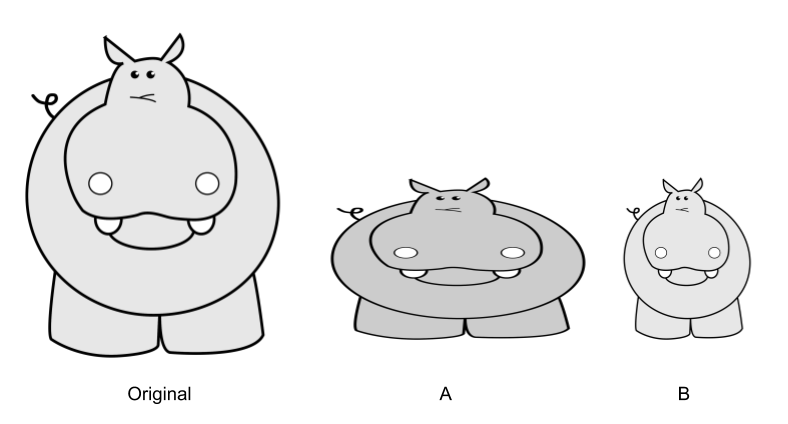
## Lesson 1: Scale Drawings

* Let’s make a scale drawing.

### 1.1: Is That the Same Hippo?



Diego took a picture of a hippo and then edited it. Which is the distorted image? How can you tell?

Is there anything about the pictures you could measure to test whether there’s been a distortion?

### 1.2: Sketching Stretching

A **dilation** with center and positive **scale factor** takes a point along the ray  to another point whose distance is times farther away from than is. If  is less than 1 then the new point is really closer to , not farther away.

1. Dilate using as the center and a scale factor of 3. is 40 mm from .

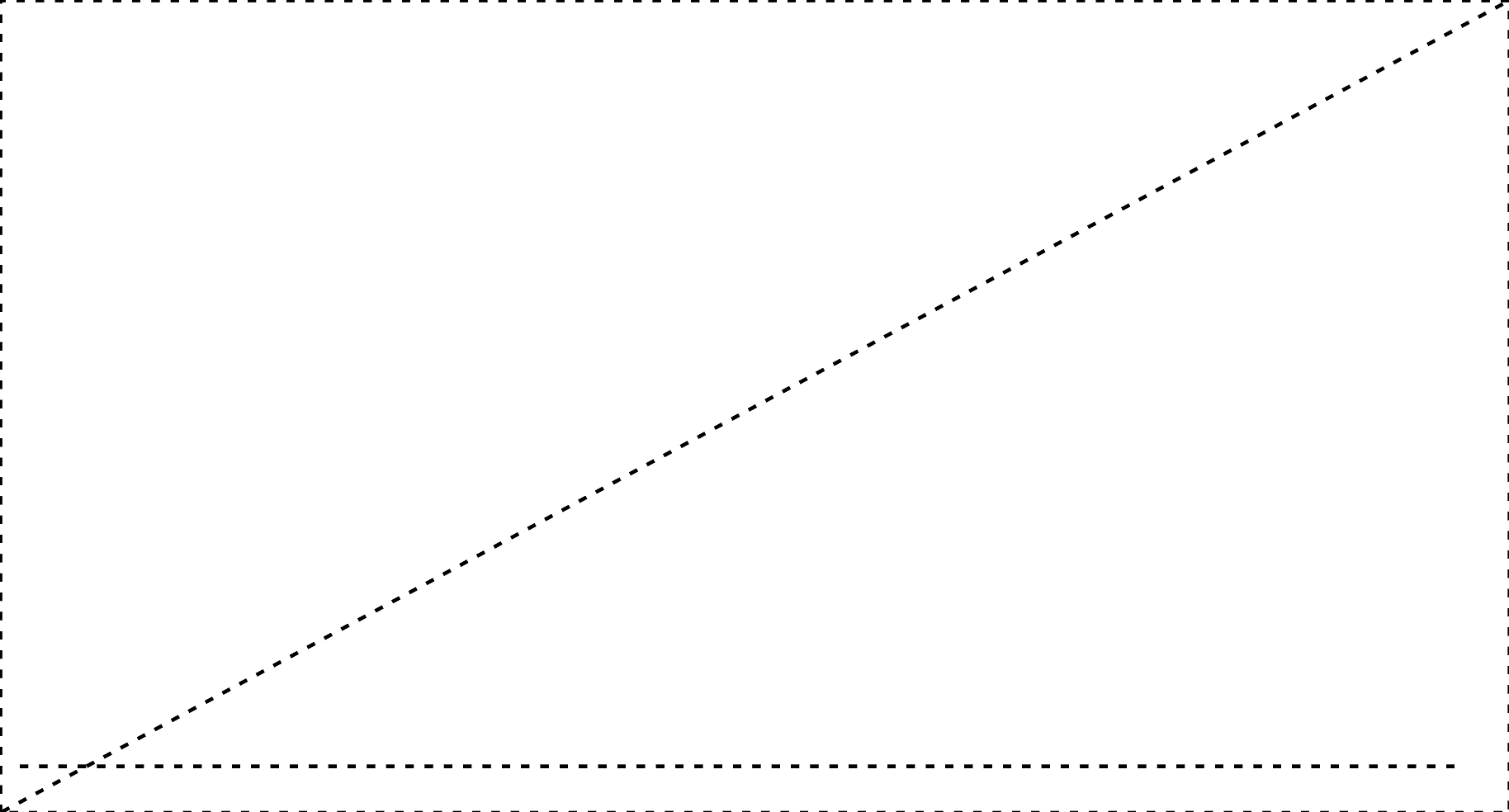
* 

1. Dilate using as the center and a scale factor of . is 40 mm from .

* 

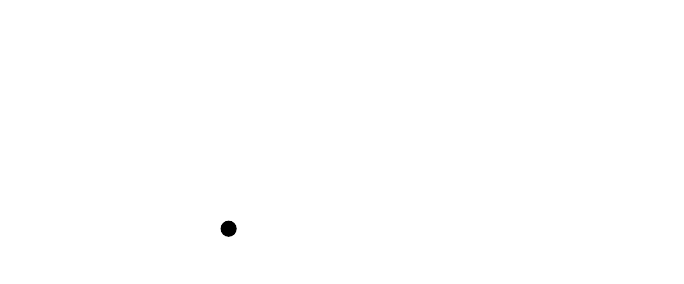
### 1.3: Mini Me

1. Dilate the figure using center and scale factor .

* 

1. What do you notice? What do you wonder?

#### Are you ready for more?



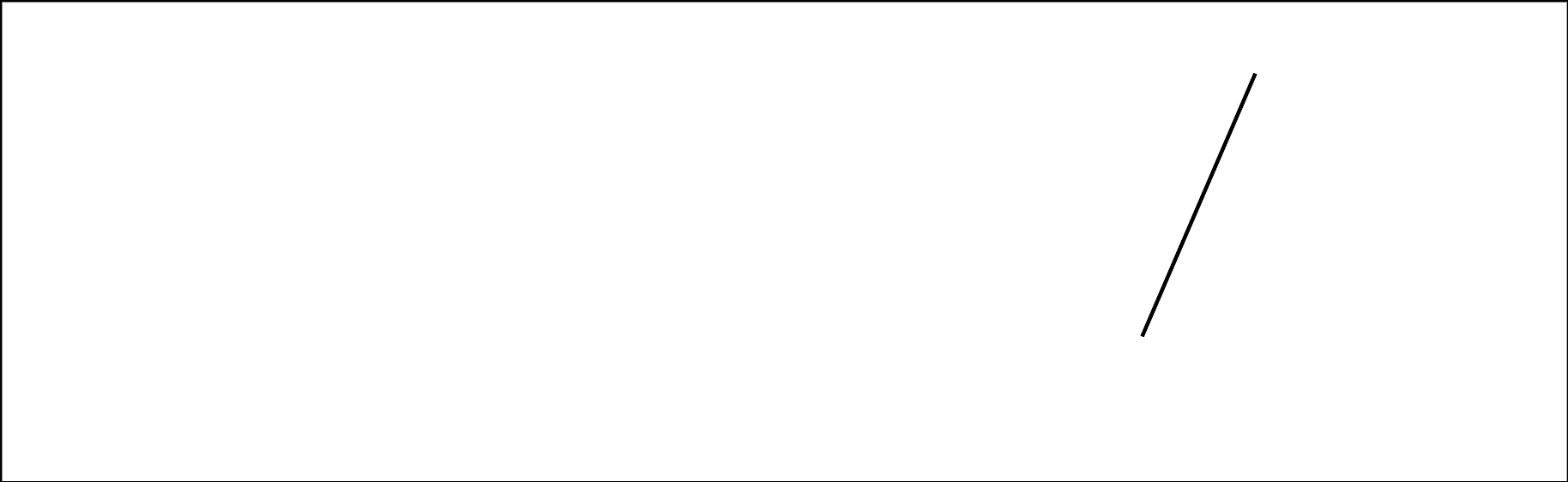
1. Dilate segment using center by scale factor . Label the result .
2. Dilate the segment using center by scale factor .
3. How does the length of  compare to ? How would the length of  change if  was infinitely far away? Explain or show your answer.

### Lesson 1 Summary

A scale drawing of an object is a drawing in which all lengths in the drawing correspond to lengths in the object by the same scale. When we scale a figure we need to be sure to scale all of the parts equally or else the image will become distorted.

Creating a scaled copy involves multiplying the lengths in the original figure by a **scale factor**. The scale factor is the factor by which every length in a original figure is multiplied when you make a scaled copy. A scale factor greater than 1 enlarges an object while a scale factor less than 1 shrinks an object. What would a scale factor equal to 1 do?

For example, segment is a scaled copy of segment with a scale factor of . So . If , then or 1.5.



To perform a **dilation**, we need a center of dilation, a scale factor, and something to dilate. A dilation with center and positive scale factor takes a point along the ray  to another point whose distance is times farther away from than is.

Segment is a dilation of segment using center and a scale factor of 3. So . If , then .



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