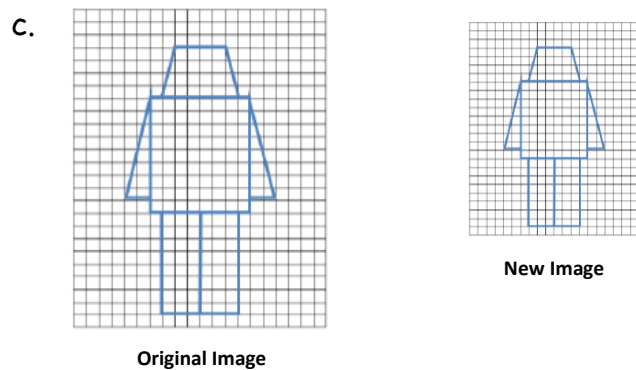
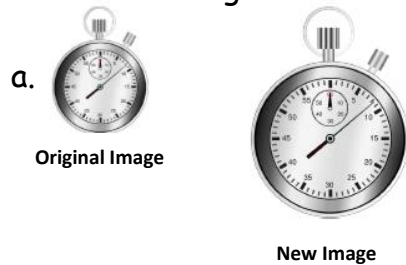


Pre-Algebra

Aim: What is a scale factor? How do we calculate scale factors?

Do Now: Determine if the new image is an enlargement or a reduction of the original image.



Yesterday, we used scales to set up proportions and find missing measurements in scale models and scale drawings. Today we are going to look at a _____ which is the ratio of any length in a scale drawing to its corresponding length in the original image. The scale factor is also the _____ because every single dimension of the original image and the scaled image will be proportional (the scale factor will remain constant).

A scale factor can only be calculated when the units are the same.

1. A drawing has a scale of 1 ft : 3 yd. What is the scale factor of the drawing?
2. A sofa is 6 feet long. In a scale drawing, the sofa is 4 inches long. Find the scale factor of the drawing.
3. The scale on a map is 2 ft = 3 miles. What is the scale factor? (Assume 5,280 feet in a mile).

4. A car is 10 feet long, but in a scale drawing, it is only 5 inches. Write the scale factor.

5. In the museum, a map shows Manhattan as only 1 ft. wide. Manhattan is actually 2.3 miles wide. Find the scale factor.

6. A blueprint of a house is 2in = 10 feet. Write the scale factor.

7. A 400m-long playground is only 10 cm in the scale drawing. What is the scale factor?

8. John made a 12in. model of a 750 ft tall building. What is the scale factor?

9. Correct the error. A student is asked to find the scale factor that relates an 8in. scale model to a 64 feet building. She solves the problem by writing the following:

$$\frac{8 \text{ in}}{64 \text{ ft}} = \frac{1}{8}$$

What error did the student make? What is the correct scale factor?

10. Fill in the blank: when the scale factor is a fraction less than 1, then the scale is a _____ of the original image. When the scale factor is a whole number that is greater than 1, then the scale is a _____ of the original image.

11. A sofa is 5 feet long. In a scale drawing the sofa is 4 inches long.



a. Calculate the scale factor.

b. Using the scale factor, calculate the width of the couch in the scale drawing if the actual width is $2\frac{1}{2}$ feet.

Take Away

The scale factor is the ratio of _____ measurement to _____ measurement in the same unit.
(New Image) (Original Image)

When an object is enlarged, the scale factor (*multiplier*) is a ratio _____ than 1.

When an object is reduced in size, the scale factor (*multiplier*) is a ratio _____ than 1.