

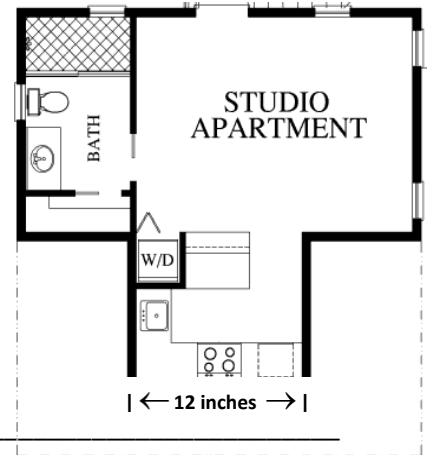
Pre-Algebra

Aim: How do scales help us determine actual dimensions of objects?

Do Now: Consider the blueprint of the studio apartment.

A blueprint is a technical drawing that usually displays architectural plans. Pete's blueprint shows a layout of his studio apartment.

Every 4 inches on the blueprint represents 3 feet of actual apartment. One of the walls in the blueprint is 12 inches. What is the actual length of the wall?



Finding Dimensions

A **scale drawing** is a proportional two-dimensional drawing that is *similar* to an actual object. Scale drawings can represent objects that are smaller (*reduced in size*) or larger (*enlarged in size*) than the actual object.

A **scale** is a ratio between 2 sets of measurements. It shows how a dimension in a scale drawing is related to the actual object.

Scale Ratio = _____ : _____ or _____ : _____

Scales are usually shown as two numbers separated by a colon such as 1:20 or 1cm:1m. Scales can be shown in the same unit or different units.

Using proportions to find missing measurements

1. If the distance on a map from Atlanta to Columbia is 6 inches, what is the actual distance in miles if the scale on the map is $1\frac{1}{2}$ in : 50 miles?



2. A map has a scale of 1 centimeter: 10 kilometers. If the actual distance is 340 km, find the map distance in centimeters.

3. A scale model of an aircraft has a scale of 1 : 43. The aircraft has a wingspan of 116.1 feet. Find the scale model's wingspan, in feet.

4. A map has a scale of 1 inch: 12 miles. If the actual distance is 27 miles, what is the distance on the map?

5. The scale of a model train is 1 inch to 13.5 feet. One of the cars of the model train is 5 inches long. What is the length, in feet, of the actual train car?

More Examples

6. The art class is planning to paint a mural on an outside wall. The image they are painting comes from a 5" by 7" framed photo.

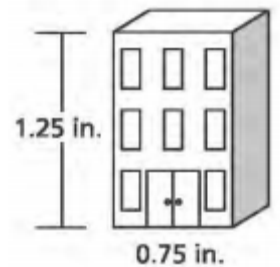
a. Is the mural an enlargement or reduction of the photo?



b. If the scale used by the art class is 2 in. = 3ft., find the area of the mural in square feet.

7. The drawing of a building, shown below, has a scale of 1 inch to 30 feet. What is the actual height, in feet, of the building?

- A. 22.5 B. 24 C. 37.5 D. 40



Take Away

Scale drawings and models represent objects/images that are either _____

or _____ in size. The measurements used in the scale drawings/models are

_____ to the corresponding measurements of the actual object or original image.