

## Learning Targets

- I can use actual dimensions to find the scale of a figure, map, and/or model
- I can use a scale to find actual dimensions/distance

## Scale Drawings

Scale Drawing: A 2-dimensional drawing that is similar to the object it represents.

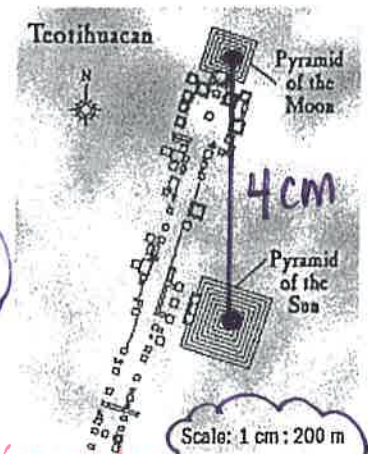
Scale Model: A 3-dimensional model that is similar to the object it represents.

Scale Factor: Gives the relationship between the drawing/model and the actual dimensions.

1. On the map, the center of the Pyramid of the Sun is 4 centimeters from the center of the Pyramid of the Moon. What is the actual distance from the center of the Pyramid of the Sun to the center of the Pyramid of the Moon?

$$\frac{\text{Map}}{\text{actual}} \Rightarrow \frac{1\text{cm}}{200\text{M}} = \frac{4\text{cm}}{x\text{M}}$$

$$x = 800 \text{ meters}$$



2. A map has a scale of 1 mm: 15 miles. Use the given map distance to find the actual distance.

a. 4 mm

$$\frac{1\text{MM}}{15\text{Mi}} = \frac{4\text{MM}}{x\text{Mi}} \quad x = 60 \text{ miles}$$

b. 10 mm

$$\frac{1\text{MM}}{15\text{Mi}} = \frac{10\text{MM}}{x\text{Mi}} \quad x = 150 \text{ miles}$$

c. 3.5 mm

$$\frac{1\text{MM}}{15\text{Mi}} = \frac{3.5\text{MM}}{x\text{Mi}} \quad x = 52.5 \text{ miles}$$

Important!

3. A map has a scale of  $1 \text{ cm} : 4 \text{ km}$ . Use the given actual distance to find the distance on the map.

a. 24 km  $\frac{1 \text{ cm}}{4 \text{ km}} = \frac{x \text{ cm}}{24 \text{ km}} \quad 4x = 24 \quad x = 60 \text{ cm}$

b. 1.5 km  $\frac{1 \text{ cm}}{4 \text{ km}} = \frac{x \text{ cm}}{1.5 \text{ km}} \quad 4x = 1.5 \quad x = .375 \text{ cm}$

c. 32 km  $\frac{1 \text{ cm}}{4 \text{ km}} = \frac{x \text{ cm}}{32 \text{ km}} \quad 4x = 32 \quad x = 8 \text{ cm}$

4. Every few years, the Grand Place in Brussels, Belgium, is decorated with a large floral carpet made of begonias. Before making the carpet, designers make detailed scale drawings. Suppose the floral carpet is to be  $40 \text{ meters wide}$ . A designer creates a scale drawing of the carpet that is  $20 \text{ centimeters wide}$ . Find the drawing's scale.

$$\frac{\text{Scale}}{\text{actual}} \Rightarrow \frac{20 \text{ cm}}{40 \text{ m}} * \frac{1 \text{ Meter}}{100 \text{ cm}} = \frac{1}{200}$$

5. Find the distance between Kumba and Yorkshire on a map with a scale of  $1 \text{ cm} : 13 \text{ km}$  if they are actually  $130 \text{ km}$  apart.

$$\frac{\text{Scale}}{\text{actual}} \Rightarrow \frac{1 \text{ cm}}{13 \text{ km}} = \frac{x \text{ cm}}{130 \text{ km}} \quad 13x = 130 \quad x = 10 \text{ cm}$$

6. A model train is  $3 \text{ inches tall}$ . If it was built with a scale of  $1 \text{ in} : 4 \text{ ft}$ , then how tall is the real train?

$$\frac{\text{Scale}}{\text{actual}} \Rightarrow \frac{1 \text{ in}}{4 \text{ ft}} = \frac{3 \text{ in}}{x \text{ ft}} \quad x = 12 \text{ ft}$$

7. A model motorcycle is  $4 \text{ in long}$ . If it was built with a scale of  $1 \text{ in} : 3 \text{ ft}$ , then how long is the real motorcycle?

$$\frac{\text{Scale}}{\text{actual}} \Rightarrow \frac{1 \text{ in}}{3 \text{ ft}} = \frac{4 \text{ in}}{x \text{ ft}} \quad x = 12 \text{ ft}$$