

# 5.7

## Maps & Scale

### Drawings

**A Scale drawing** is an enlarged or reduced drawing of an object that is similar to the actual object..

**A Scale** is the ratio of the length of the model to the corresponding length of the actual object.

## Solving problems with scale factors

Steps:

- 1) Write the scale factor as a fraction.
- 2) Write a 2nd fraction that compares the original & model in the same way.
- 3) Make a proportion with the 2 fractions.
- 4) Solve using cross products.

1) The scale of a model of a car is 1 inch : 6 feet. Find the actual length for a car whose model has a length of 4.5 inches.

$1 \times 2$   


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**Model**

**actual**

$$\frac{1 \text{ in}}{6 \text{ ft}} = \frac{4.5 \text{ in}}{x \text{ ft}}$$

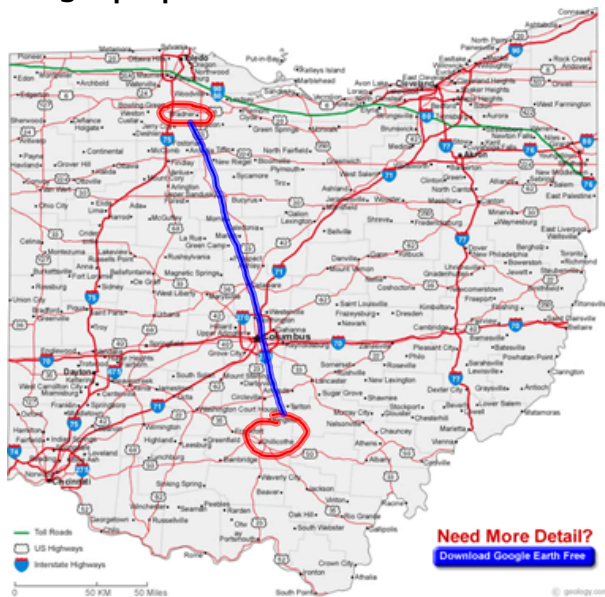
$$1 \cdot x = (4.5) \cdot 6$$

$x = 27 \text{ ft}$

1-3

Work

Example 2. Use the map below and a ruler to find the map distance from Fostoria to Chillicothe. Then find the actual distance using a proportion.



2 in : 50 mi

$\frac{\text{map}}{\text{actual}} \rightarrow \frac{2 \text{ in}}{50 \text{ mi}} = \frac{4.25}{x}$

$\frac{2x}{2} = \frac{212.5}{2}$

$x = 106\frac{1}{4} \text{ mi}$

Example 1. A student is 5ft tall and casts a shadow that is 15 ft long. A tree nearby casts a shadow 75ft long. Find the height of the tree.



actual  
shadow

$$\frac{5}{15} = \frac{x}{75}$$

$$15 \cdot x = 5 \cdot 75$$

$$\frac{15x}{15} = \frac{375}{15}$$

$$x = 25 \text{ ft}$$

## Homework

**p. 277 #2-14 even, 22,  
31, 40, 42**

Show proportions & work on  
# 2-14 even, 22, 31, 40