

Get out your homework from yesterday and have it ready to check.

## Classwork - Scale Drawings Day 2

ARCHITECTURE The scale on a set of architectural drawings for a house is  $\frac{1}{2}$  inch =  $1\frac{1}{2}$  feet. Find the length of each part of the house.

OR  $1\text{in} = 3\text{ft}$

	Room	Drawing Length	Process(Work)	Actual Length
1.	Living Room	5 inches	$\frac{0.5\text{in}}{1.5\text{ft}} = \frac{5\text{in}}{x}$	15ft
2.	Dining Room	4 inches	$\frac{1\text{in}}{3\text{ft}} = \frac{4\text{in}}{x}$	12ft
3.	Kitchen	$5\frac{1}{2}$ inches	$\frac{0.5\text{in}}{1.5\text{ft}} = \frac{5.5\text{in}}{x}$	$16\frac{1}{2}$ ft
4.	Laundry Room	$3\frac{1}{4}$ inches	$\frac{1\text{in}}{3\text{ft}} = \frac{3.25\text{in}}{x}$	$9\frac{3}{4}$ ft
5.	Basement	10 inches	$10 \cdot 3$	30ft
6.	Garage	$8\frac{1}{3}$ inches	$\frac{0.5\text{in}}{1.5\text{in}} = \frac{8\frac{1}{3}\text{in}}{x}$	25ft

**ARCHITECTURE** As part of a city building refurbishment project, architects have constructed a scale model of several city buildings to present to the city commission for approval. The scale of the model is 1 inch = 9 feet.

7. The courthouse is the tallest building in the city. If it is  $7\frac{1}{2}$  inches tall in the model, how tall is the actual building?

$$\frac{1 \text{ in}}{9 \text{ ft}} = \frac{7\frac{1}{2} \text{ in}}{x} \quad | \quad x = 67\frac{1}{2}$$
$$x = 67\frac{1}{2}$$

$67\frac{1}{2} \text{ ft}$

8. The city commission would like to install new flagpoles that are each 45 feet tall. How tall are the flagpoles in the model?

$$\frac{1 \text{ in}}{9 \text{ ft}} = \frac{x}{45 \text{ ft}} \quad | \quad \frac{45}{9} = \frac{9x}{9}$$
$$x = 5$$

$5 \text{ in}$

9. In the model, two of the flagpoles are 4 inches apart. How far apart will they be when they are installed?

$$\frac{1 \text{ in}}{9 \text{ ft}} = \frac{4 \text{ in}}{x}$$
$$| \quad x = 36$$
$$x = 36$$

$36 \text{ ft}$

Scale of the model  $\rightarrow$  1 inch = 9 feet

10. The model includes a new park in the center of the city. If the dimensions of the park in the model are 9 inches by 17 inches, what are the actual dimensions of the park?

$$\frac{1 \text{ in}}{9 \text{ ft}} = \frac{9 \text{ in}}{x} \quad | x = 81 \quad \underline{x = 81 \text{ ft}}$$
$$\frac{1 \text{ in}}{9 \text{ ft}} = \frac{17 \text{ in}}{x} \quad | x = 153 \quad \underline{x = 153 \text{ ft}}$$

81 ft by 153 ft

11. Find the scale factor.

$$\frac{1 \text{ in}}{9 \text{ ft}} \cdot 12 = \frac{1 \text{ in}}{108 \text{ ft}} = \frac{1}{108}$$

Scale Example: 2 cm = 15 m

Means  $\rightarrow$  Every 2 cm on one object is equivalent to 15 m on the other object.

Written as a Ratio  $\rightarrow \frac{2 \text{ cm}}{15 \text{ m}}$

Written as a Proportion  $\rightarrow \frac{2 \text{ cm}}{15 \text{ m}} = \frac{\text{cm}}{\text{m}}$

1) A map has a scale of 2 inches = 35 miles. Use the scale to write a proportion and find the missing lengths in the problems below.

A) Joplin and Oklahoma City are 9 inches away from each other on the map. What is the actual distance between the two cities?

$$\frac{2 \text{ in}}{35 \text{ mi}} = \frac{9 \text{ in}}{x}$$
$$\frac{2x}{2} = \frac{315}{2}$$

$x = 157\frac{1}{2} \text{ miles}$

B) The distance between Troy City and Ben City is 315 miles. How far apart are they on the map?

$$\frac{2 \text{ in}}{35 \text{ mi}} = \frac{x}{315 \text{ mi}}$$
$$\frac{35x}{35} = \frac{630}{35}$$

$x = 18 \text{ in}$

C) Janson City is  $3\frac{1}{2}$  inches from Wilson City. What is the actual distance between the two cities?

$$\frac{2 \text{ in}}{35 \text{ mi}} = \frac{3\frac{1}{2} \text{ in}}{x}$$
$$\frac{2x}{2} = \frac{122\frac{1}{2}}{2}$$

$x = 61\frac{1}{4} \text{ miles}$

2) Use the scale factor  $1 \text{ cm} = 75 \text{ km}$  and a ruler to find the distances between the following cities in North Carolina. SHOW WORK AND LABEL

A) What is the actual distance between Charlotte and Raleigh?

$$\frac{1 \text{ cm}}{75 \text{ km}} = \frac{3 \text{ cm}}{x}$$

$$x = 225 \text{ mi}$$



B) What is the actual distance between Winston-Salem and Raleigh?

$$\frac{1 \text{ cm}}{75 \text{ km}} = \frac{2.1 \text{ cm}}{x}$$

$$x = 157 \frac{1}{2} \text{ miles}$$

$$\frac{1 \text{ cm}}{75 \text{ km}} = \frac{2 \text{ cm}}{x}$$

$$x = 150 \text{ mi}$$

C) Approximately, what is the actual distance of the northern state border of North Carolina?

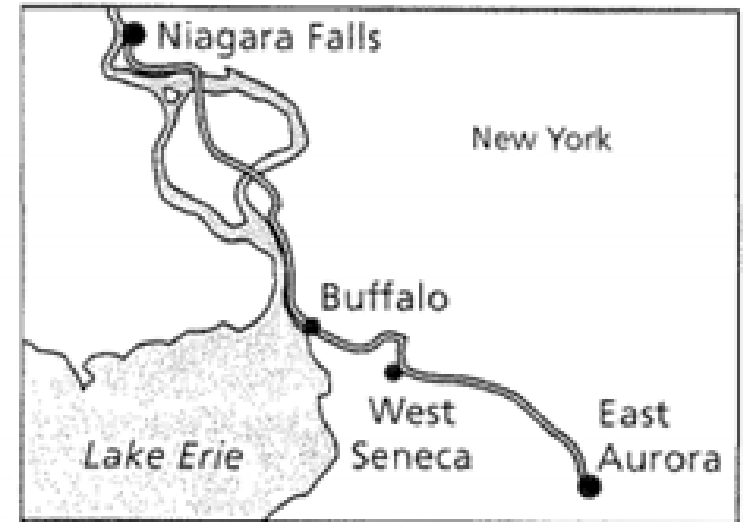
$$\frac{1 \text{ cm}}{75 \text{ km}} = \frac{7.4 \text{ cm}}{x}$$

$$x = 555 \text{ km}$$

3) Use the scale factor  $1 \text{ cm} = 5.5 \text{ miles}$  a ruler to find the distances between the following cities in New York.  
**SHOW WORK AND LABEL**

A) What is the actual distance between Niagara Falls and Buffalo?

B) What is the actual distance between Buffalo and East Aurora?



C) What is the actual distance between Niagara Falls and East Aurora?

### Finding the Scale and Scale Factor

4) A 60 foot long playground is just 15 in on the scale drawing. What is the scale on the scale drawing? What is the scale factor?

Scale  $\rightarrow \frac{15 \text{ in} \div 15}{60 \text{ ft} \div 15} = \frac{\text{1 in}}{4 \text{ ft}}$   
 $\text{1 in} = 4 \text{ ft}$

Scale Factor  $\rightarrow \frac{1 \text{ in}}{4 \text{ ft}} \rightarrow \frac{1 \text{ in}}{48 \text{ in}} = \frac{1}{48}$

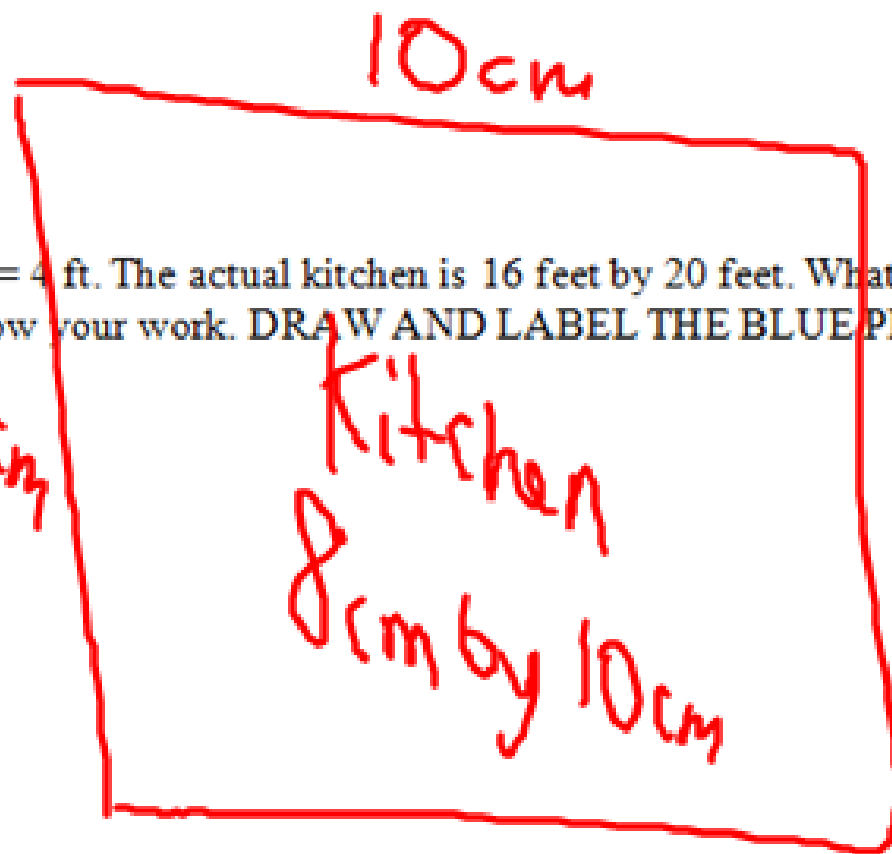
5) The height of a building in an architectural drawing is 10 inches. Its actual height is 150 feet. What is the scale of the drawing? What is the scale factor?

### Drawing Scale Drawings

6) The scale blue prints for a new house is 2 cm = 4 ft. The actual kitchen is 16 feet by 20 feet. What are the dimensions of the kitchen on the blue print? Show your work. DRAW AND LABEL THE BLUEPRINT

$\frac{2 \text{ cm}}{4 \text{ ft}} = \frac{x}{16 \text{ ft}}$        $\frac{4x}{4} = \frac{32}{4}$        $x = 8 \text{ cm}^*$

$\frac{2 \text{ cm}}{4 \text{ ft}} = \frac{x}{20 \text{ ft}}$        $x = 10 \text{ cm}^*$



7) A scale drawing of a patio that is 24 feet by 36 feet has a scale of  $1 \text{ cm} = 6 \text{ ft}$ . What are the dimensions of the scale drawing of the patio? Show your work. **DRAW AND LABEL SCALE DRAWING OF THE PATIO**

8) The scale drawing of a yard has a scale of  $2.5 \text{ cm} = 10 \text{ ft}$ . The actual yard is 48 feet by 60 feet. What are the dimensions of the yard on the scale drawing? Show your work. **DRAW AND LABEL THE DRAWING**