

Graphic Arts  
Ratio & Proportion Worksheet

Name

Key

1. A blueprint has a scale of 1": 12". How would you explain what the dimensions on the actual part would be?

1 inch on the blueprint is equal to 12 inches on the part.

2. Sam wants a 5" x 3" photo reduced to fit into a graphic for a business card with a height of 1.5". What is the width of the reduced graphic?

$$\begin{array}{l} \text{width} \\ \text{height} \end{array} \frac{5\text{in}}{3\text{in}} = \frac{x}{1.5\text{in}}$$

$$\frac{3x}{3} = \frac{7.5}{3}$$

$$x = 2.5\text{in}$$

3. Alex wants a 5" x 7" graphic enlarged to fit into a graphic for a banner. The width of the photo is 1.5 feet. What is the height of the enlarged graphic?

$$1.5\text{ft} = \frac{12\text{in}}{1\text{ft}} = 18\text{in}$$

$$\begin{array}{l} \text{width} \\ \text{height} \end{array} \frac{5\text{in}}{7\text{in}} = \frac{x}{18\text{in}}$$

$$\frac{5x}{5} = \frac{126}{5}$$

$$x = 25.2\text{in} \text{ or } 25\frac{3}{10}\text{in}$$

$$2\text{ft } 1\frac{3}{10}\text{in}$$

4. A drawing has a scale of 1 cm: 150 cm. If the length of a part on the drawing was 18 cm, what is the part's actual length? If the width of the actual part was 250 cm, what is the width on the drawing?

$$\text{length } 18 \times 150 = 2700\text{cm}$$

$$\text{width } 250 \div 150 = 1.67\text{cm}$$

5. A drawing has a scale of 1 mm: 15 mm. If the length of a part on the drawing was 10 mm, what is the part's actual length? If the width of the actual part was 50 mm, what is the width on the drawing?

$$\text{length } 10 \times 15 = 150\text{mm}$$

$$\text{width } 50 \div 15 = 3.\bar{3}\text{mm}$$

6. If the model car below was built using the scale 1 inch = 1.75 feet, what is the length of the actual car?



Model

$$\frac{1\text{in}}{1.75\text{ft}} = \frac{10\text{in}}{x}$$

$$x = 17.5$$

- a. 19 feet      b. 16 feet      c. 17.5 feet      d. 5.7 feet

7. Laura plans to have a screened-in patio built on the back of her home. The patio floor plan will have the dimensions shown in the scale drawing below. If the scale of the drawing is .5 inches = 1 foot, what are the actual dimensions of the patio?



$$\frac{.5 \text{ in}}{1 \text{ ft}} = \frac{8 \text{ in}}{x}$$

$$\frac{.5x}{.5} = \frac{8}{.5} \quad x = 16$$

$$\frac{.5}{1 \text{ ft}} = \frac{6 \text{ in}}{y}$$

$$\frac{.5y}{.5} = \frac{6}{.5}$$

$$y = 12$$

- a. 16 feet by 12 feet      c. 16 feet by 16 feet  
b. 12 feet by 9 feet      d. 19 feet by 13 feet

8. The scale used to create a blueprint of a new house is .5 inches = 1 foot. If the dimensions of the master bedroom are 9 inches by 6 inches on the drawing, what is the actual area of the room?

- a. 216 square feet      c. 324 square feet  
b. 54 square feet      d. 108 square feet

$$\frac{.5 \text{ in}}{1 \text{ ft}} = \frac{9 \text{ in}}{x}$$

$$x = 18 \text{ ft}$$

$$\frac{.5 \text{ in}}{1 \text{ ft}} = \frac{6 \text{ in}}{y}$$

$$y = 12 \text{ ft}$$

$$A = lw$$

$$A = 18(12)$$

$$A = 216 \text{ ft}^2$$

9. The scale used to create a blueprint of a new house is .5 inches = 1 foot. If the dimensions of the master bedroom are 7 inches by 6 inches on the drawing, what is the actual area of the room?

- a. 196 square feet      c. 84 square feet  
b. 168 square feet      d. 42 square feet

$$\frac{.5 \text{ in}}{1 \text{ ft}} = \frac{7 \text{ in}}{x}$$

$$x = 14 \text{ ft}$$

$$\frac{.5 \text{ in}}{1 \text{ ft}} = \frac{6 \text{ in}}{y}$$

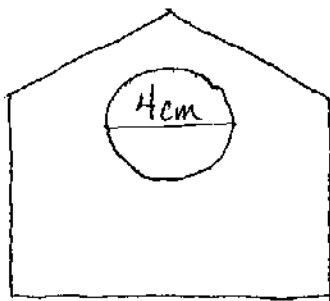
$$y = 12 \text{ ft}$$

$$A = lw$$

$$A = 14(12)$$

$$A = 168 \text{ ft}^2$$

10. A scientist has designed a new part for a large machine. The part is shown below in a scale drawing.



1 cm = 1 meter  
1 cm = 1 meter

$$4 \times 4 = 16$$

What is the actual diameter of the hole through the part?

- a. 16 meters      c. 4 meters  
b. 12.6 meters      d. 1 meter