

Unit 1 Study Guide

Name Answer Key Date _____ Section _____

1.

The proportion of two similar paintings is (in inches):

$$\frac{8}{6} = \frac{24}{18}$$

Which of the following does **not** represent a proportion of similar paintings?

$\frac{6}{8} = \frac{18}{24}$

$\frac{3}{4} = \frac{18}{24}$

$\frac{6}{24} = \frac{8}{18}$

$\frac{18}{24} = \frac{6}{8}$

$\frac{24}{8} = \frac{18}{6}$

$$\begin{array}{c} \frac{6}{8} \rightleftarrows \frac{18}{24} \\ \cancel{\frac{6}{8}} \quad \cancel{\frac{18}{24}} \\ 24 \times 6 = 8 \times 18 \\ 144 = 144 \end{array}$$

$$\begin{array}{c} \frac{3}{4} \rightleftarrows \frac{18}{24} \\ \cancel{\frac{3}{4}} \quad \cancel{\frac{18}{24}} \\ 24 \times 3 = 18 \times 4 \\ 72 = 72 \end{array}$$

$$\begin{array}{c} \frac{6}{24} \rightleftarrows \frac{8}{18} \\ \cancel{\frac{6}{24}} \quad \cancel{\frac{8}{18}} \\ 24 \times 8 = 18 \times 6 \\ 192 \neq 108 \end{array}$$

$$\begin{array}{c} \frac{18}{24} \rightleftarrows \frac{6}{8} \\ \cancel{\frac{18}{24}} \quad \cancel{\frac{6}{8}} \\ 24 \times 6 = 18 \times 8 \\ 144 = 144 \end{array}$$

$$\begin{array}{c} \frac{24}{8} \rightleftarrows \frac{18}{6} \\ \cancel{\frac{24}{8}} \quad \cancel{\frac{18}{6}} \\ 18 \times 8 = 6 \times 24 \\ 144 = 144 \end{array}$$

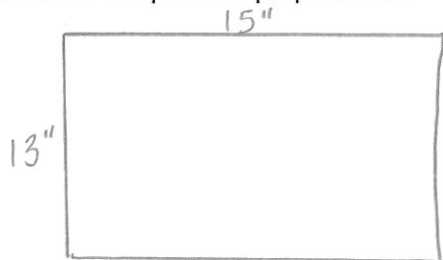
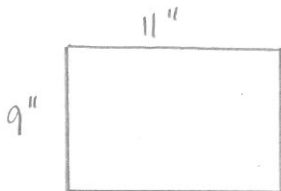
2.

Two paintings hang in different parts of the gallery. One painting is 9 inches by 11 inches. The other painting is 13 inches by 15 inches. Is the larger painting proportional to the smaller one? If yes, what is the scale factor?

Yes, the scale factor is $\frac{15}{11}$.

Yes, the scale factor is 4.

No, there is no scale factor that makes the pictures proportional.



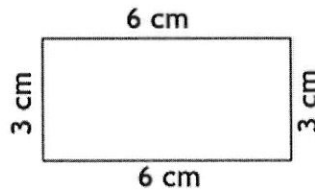
Use step 1 from class notes to 1st test to see if ratios are proportional

$$\frac{9}{11} = \frac{13}{15}$$

$$11 \times 13 \quad 9 \times 15$$

$$143 \neq 135$$

3.



What is the ratio of the shortest side to the longest side for the rectangle shown? Write the ratio as a simplified fraction.

$\frac{3}{9}$

$\frac{3}{18}$

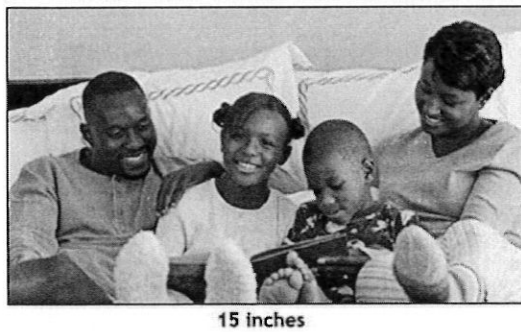
Shortest side $\frac{3 \div 3}{6 \div 3} = \frac{1}{2}$
 Longest side

$\frac{1}{2}$

$\frac{3}{6}$ is not listed as a choice so reduce the image using a scale factor of 3.

4.

no. 5. It reduces to $\frac{1}{2}$ which is a choice



This original photograph was reduced in size to make a smaller copy. What was the scale factor?

$\frac{1}{5}$

3

$\frac{1}{3}$

15 inches to 5 inches

You can reduce the image by dividing by 3 OR multiplying by $\frac{1}{3}$.

5.

The dimensions of several paintings are shown. Which of the dimensions represent a painting that is proportional to one that is 12 cm by 20 cm painting? Select all that apply.

- 6 cm by 14 cm
- 30 cm by 50 cm
- 27 cm by 45 cm
- 1.5 cm by 2.5 cm
- 9 cm by 15 cm

12 cm
20 cm

6. $\frac{12}{20} = \frac{6}{14}$ | $\frac{12}{20} = \frac{1.5}{2.5}$ | $\frac{12}{20} = \frac{30}{50}$ | $\frac{12}{20} = \frac{9}{15}$ | $\frac{12}{20} = \frac{27}{45}$

$20 \times 6 = 120 \neq 14 \times 12 = 168$ | $20 \times 1.5 = 30 = 2.5 \times 12 = 30$ | $20 \times 30 = 600 = 50 \times 12 = 600$ | $20 \times 9 = 180 = 15 \times 12 = 180$ | $20 \times 27 = 540 = 45 \times 12 = 540$

There is a sale on shoes. The new shoes are on sale for \$45 dollars. The original price was \$65. What is the ratio of savings to the original price?

- $\frac{45}{65}$
- $\frac{13}{9}$
- $\frac{4}{13}$
- $\frac{9}{13}$
- $\frac{4}{9}$

Savings $\frac{20}{65} = \frac{4}{13}$
Original price

You 1st need to find out how much the Savings is : $\frac{65}{-45}$ Savings \$ 20

7.

The proportion of two similar figures is $\frac{8}{12} = \frac{24}{36}$.

Which of the following does not represent a proportion for the same similar figures?

- $\frac{12}{8} = \frac{36}{24}$
- $\frac{8}{24} = \frac{12}{36}$
- $\frac{8}{12} = \frac{2}{3}$
- $\frac{12}{24} = \frac{8}{36}$
- $\frac{36}{24} = \frac{12}{8}$
- $\frac{36}{24} = \frac{12}{8}$

$\frac{12}{8} = \frac{36}{24}$ | $\frac{8}{24} = \frac{12}{36}$ | $\frac{8}{12} = \frac{2}{3}$ | $\frac{12}{24} = \frac{8}{36}$ | $\frac{36}{24} = \frac{12}{8}$ | $\frac{8}{12} = \frac{2}{3}$

$12 \times 24 = 288 = 36 \times 8$ | $12 \times 36 = 432 \neq 24 \times 8 = 192$ | $24 \times 12 = 288 = 8 \times 36$ | $36 \times 8 = 288 = 12 \times 24$ | $8 \times 3 = 24 = 12 \times 2$

8.

The ratio of students to classrooms is 32 students to 1 class. What statement is not accurate according to this ratio?

- If there were 64 students you would have 2 classes. TRUE
- One class contains 32 students. TRUE
- 8 students make up one-third of a class. FALSE
- A class and a half are 48 students. TRUE
- A half a class is half of 32 students. TRUE

$\frac{1}{2}$ of a class is 16 students
So $16 + 32 = 48$ students

$32 \div 3 = 10.66$

$2 \overline{)32} \checkmark$

9.



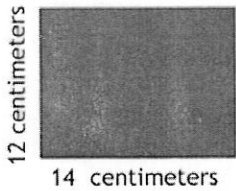
White and black checkers are shown. Which statement is not true?

- The ratio of black checkers to white checkers is $\frac{4}{3}$. *True* $\frac{8 \div 2}{6 \div 2} = \frac{4}{3}$
- The ratio of white to black checkers is $\frac{6}{8}$. *True*
- If the checkers were shared with 3 people, each would get 2 white and $2\frac{2}{3}$ black checkers. *True*
- If you doubled the number of white checkers and doubled the number of black checkers, the ratio would not change. *True* $\frac{6 \times 2}{8 \times 2} = \frac{12}{16}$
- If you doubled the number of white checkers, the ratio of black to white checkers would be 3 to 4. *False*

12 white 8 black $\left. \begin{array}{l} \\ \end{array} \right\} \text{False}$

$$\frac{8 \div 4}{12 \div 4} = \frac{2}{3}$$

10.



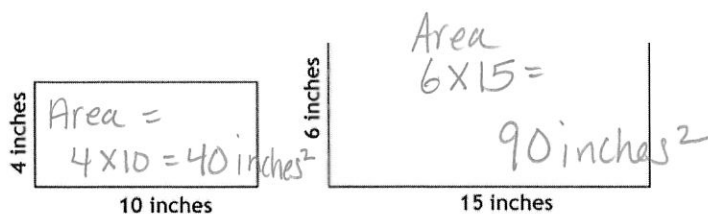
Consider the rectangle with the dimensions shown. Which of the following ratios does not illustrate a comparison between the two dimensions?

- $\frac{12}{14}$ ✓
- 14 : 12 ✓
- 2 : 12

- $\frac{14}{12}$ ✓
- $\frac{6}{7}$ ✓

$$\frac{12 \div 2}{14 \div 2} = \frac{6}{7}$$

11.



The two rectangles shown are proportional. Given the area of the small rectangle, what scale factor can be used to find the area of the large rectangle?

- $\frac{3}{2}$
- $\frac{40}{1}$
- $\frac{90}{1}$

$\frac{2}{3}$
 $\frac{9}{4}$
 SCALE factor
 $40 \times \boxed{2.25} = 90$

$$90 \div 40 = 2.25$$

$$2.25 = 2\frac{1}{4} = \frac{9}{4}$$

12.

If the scale factor is smaller than 1, what statement will not be true about the new, similar object?

- The new object will have smaller dimensions than the original object.
- The object's area will be smaller than the original object.
- The object will be reduced in size.
- The ratio of the new width to the new length will be smaller than the ratio of the original width to the original length.

Because you are using the same scale factor both ratios are proportional therefore the ratio will not change.