

Name _____

Proportions

Example 1

A rectangle has a length of 10 and a width of 8. Another rectangle has a length of 60 and a width of 48. Are the sides of the rectangles proportional?

A proportion is an equation involving two ratios that are equal. The order is important when you write the ratios to test for a proportion.

$$\begin{array}{l} \text{length} \longrightarrow \frac{10}{8} = \frac{10 \times 6}{8 \times 6} = \frac{60}{48} \\ \text{width} \longrightarrow \end{array}$$

Since $\frac{10}{8} = \frac{60}{48}$, the sides of the rectangles are proportional.

Example 2

Find the missing number in the proportion $\frac{28}{32} = \frac{7}{n}$. Use equivalent ratios.

$$\frac{28}{32} = \frac{28 \div 4}{32 \div 4} = \frac{7}{8}. \text{ So, } n = 8.$$

Tell whether each pair of ratios can form a proportion.

1. $\frac{5}{6}, \frac{15}{18}$

2. $\frac{8}{14}, \frac{4}{7}$

3. $\frac{5}{6}, \frac{30}{42}$

4. $\frac{6}{15}, \frac{30}{25}$

5. $\frac{12}{15}, \frac{8}{10}$

6. $\frac{15}{20}, \frac{20}{25}$

7. $\frac{16}{24}, \frac{24}{32}$

8. $\frac{56}{72}, \frac{7}{9}$

Find the missing number in each proportion.

9. $\frac{3}{4} = \frac{n}{16}$

10. $\frac{n}{8} = \frac{16}{32}$

11. $\frac{6}{n} = \frac{48}{56}$

12. $\frac{1}{5} = \frac{9}{n}$

Name _____

Proportions (continued)

Tell whether each pair of ratios can form a proportion.

13. $\frac{5}{8}, \frac{25}{45}$

14. $\frac{16}{20}, \frac{4}{5}$

15. $\frac{27}{30}, \frac{9}{10}$

16. $\frac{16}{18}, \frac{2}{9}$

Find the missing number in each proportion.

17. $\frac{2}{5} = \frac{18}{n}$

18. $\frac{48}{64} = \frac{n}{4}$

19. $\frac{24}{n} = \frac{3}{7}$

20. $\frac{10}{45} = \frac{2}{n}$

21. $\frac{16}{n} = \frac{4}{7}$

22. $\frac{30}{27} = \frac{20}{n}$

23. $\frac{n}{5} = \frac{4}{10}$

24. $\frac{n}{15} = \frac{2}{6}$

25. A rectangle has a length of 16 and a width of 21. Another rectangle has a length of 64 and a width of 84. Are the sides of the rectangle proportional? _____

26. You use a photocopy machine to enlarge a paper for school. The original is 8 inches wide and 10 inches long. The enlarged copy has a width of 12 inches. What is the length? _____

27. Write three ratios that are proportional to $\frac{5}{6}$.

Test Prep Choose the correct letter for each answer.

28. Find the missing number in the proportion: $\frac{n}{4} = \frac{18}{24}$.

A 8

B 3

C 9

D 6

E NH

29. A rectangle has a length of 42 and a width of 30. Another rectangle has a length of 7. If the two rectangles are proportional, what is the width of the second rectangle?

F 5

G 6

H 7

J 15

K NH