



SKILL 4: Meaning of Proportion

Two equal ratios form a **proportion**. Both ratios in a proportion must use the same units. For example, $\frac{1}{2} = \frac{3}{6}$ is a proportion.

Example 1

Do $\frac{4}{5}$ and $\frac{12}{15}$ form a proportion?

$$\frac{4}{5} \stackrel{?}{=} \frac{12}{15} \quad \leftarrow 4 \times 3 = 12$$

$$\frac{5}{5} \stackrel{?}{=} \frac{15}{15} \quad \leftarrow 5 \times 3 = 15$$

Multiply both terms of one ratio by the same number and get the second ratio. Because the ratios are equal, they do form a proportion.

Example 2

A grocery store sells three oranges for \$.49 and a bag of a dozen oranges for \$2.00. Are these price rates equal?

Make a table of equal ratios to find the cost of a dozen (12) oranges at the rate of 3 for \$.49.

Oranges	3	6	9	12
Dollars	.49	.98	1.47	1.96

$\frac{3 \text{ oranges}}{\$.49} = \frac{12 \text{ oranges}}{\$1.96}$, less than the \$2.00 for a bag of a dozen.

The prices are not equal rates. They do not form a proportion.

Guided Practice

Do $\frac{72}{24}$ and $\frac{8}{3}$ form a proportion?

1. What do you divide 72 by to get 8? _____
2. What do you divide 24 by to get 3? _____
3. Do the ratios form a proportion? Why or why not?

Do the ratios form a proportion? Write *yes* or *no*.

4. $\frac{21}{3} \stackrel{?}{=} \frac{7}{1}$

5. $\frac{4}{9} \stackrel{?}{=} \frac{16}{27}$

6. $\frac{8}{9} \stackrel{?}{=} \frac{48}{54}$

7. $\frac{30}{10} \stackrel{?}{=} \frac{5}{6}$

8. $\frac{5 \text{ boys}}{4 \text{ girls}} = \frac{20 \text{ girls}}{25 \text{ boys}}$ is not true. Use this information to write a proportion.

SKILL 4: PracticeDo the ratios form a proportion? Write *yes* or *no*.

1. $\frac{7}{15} \stackrel{?}{=} \frac{28}{60}$

2. $\frac{24}{6} \stackrel{?}{=} \frac{12}{3}$

3. $\frac{36}{42} \stackrel{?}{=} \frac{6}{8}$

4. $\frac{6}{13} \stackrel{?}{=} \frac{18}{36}$

5. $\frac{9}{10} \stackrel{?}{=} \frac{54}{60}$

6. $\frac{64}{8} \stackrel{?}{=} \frac{8}{2}$

7. $\frac{5}{9} \stackrel{?}{=} \frac{55}{90}$

8. $\frac{33}{48} \stackrel{?}{=} \frac{11}{16}$

9. $\frac{2}{78} \stackrel{?}{=} \frac{1}{39}$

10. $\frac{15}{75} \stackrel{?}{=} \frac{1}{4}$

11. $\frac{20}{25} \stackrel{?}{=} \frac{4}{5}$

12. $\frac{0.5}{2} \stackrel{?}{=} \frac{1.0}{4}$

13. Complete the table of equal ratios for the Pep Club's Lemonade Sale.

Cups sold	450					10	5	1
Profit in dollars	90							

14. What does the ratio for 10 cups sold tell you?
_____15. Write a proportion that gives the unit rate for a cup of lemonade.
_____16. Write a proportion that could be used to find the profit if 300 cups of lemonade are sold.
_____17. Which ratio forms a proportion with $\frac{5}{6}$?

A $\frac{6}{5}$

C $\frac{20}{24}$

B $\frac{20}{30}$

D $\frac{24}{20}$

Skill 4

18. Which ratio is a unit rate?

F $\frac{1\text{¢}}{10\text{¢}}$

H $\frac{1\text{ cm}}{5\text{ m}}$

G $\frac{5\text{ m}}{1\text{ cm}}$

J $\frac{10\text{¢}}{1\text{¢}}$

Skill 3