

LESSON
3

Proportional Relationships

Review for Mastery: Solving Proportions

Solving a proportion is like solving an equation involving fractions.

- Multiply both sides of the equation by the denominator of the fraction containing the variable.
- If the variable is in the denominator, invert both fractions in the proportion.

$$\frac{n}{7} = \frac{20}{28}$$

$$7 \cdot \frac{n}{7} = 7 \cdot \frac{20}{28}$$

$$n = \frac{7 \cdot 20}{28} = \frac{140}{28}$$

$$n = 5$$

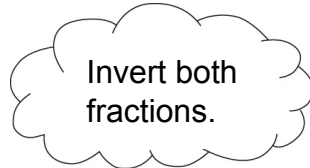
$$\frac{12}{x} = \frac{9}{6}$$

$$\frac{x}{12} = \frac{6}{9}$$

$$12 \cdot \frac{x}{12} = 12 \cdot \frac{6}{9}$$

$$x = \frac{12 \cdot 6}{9} = \frac{72}{9}$$

$$x = 8$$



Solve the proportion.

1. $\frac{a}{2} = \frac{27}{18}$

$$\text{---} \cdot \frac{a}{2} = \frac{27}{18} \cdot \text{---}$$

$$a = \frac{27 \cdot \text{---}}{18}$$

$$a = \frac{\text{---}}{18}$$

$$a = \text{---}$$

2. $\frac{8}{12} = \frac{n}{9}$

$$\text{---} \cdot \frac{8}{12} = \frac{n}{9} \cdot \text{---}$$

$$\frac{\cdot 8}{12} = n$$

$$\frac{\text{---}}{12} = n$$

$$n = \text{---}$$

3. $\frac{10}{t} = \frac{4}{6}$

$$\frac{t}{10} = \frac{6}{4}$$

$$\text{---} \cdot \frac{t}{10} = \frac{6}{4} \cdot \text{---}$$

$$t = \frac{6 \cdot \text{---}}{4}$$

$$t = \frac{\text{---}}{4}$$

$$t = \text{---}$$

4. $\frac{x}{15} = \frac{8}{10}$

5. $\frac{7}{3} = \frac{w}{18}$

6. $\frac{3}{2} = \frac{15}{c}$

LESSON
3

Proportional Relationships

Review for Mastery: Solving Proportions (continued)

You can use proportions to solve word problems.

A fruit punch is made with 32 ounces of ginger ale for every 12 ounces of frozen orange juice concentrate. How much ginger ale should you use for 30 ounces of orange juice concentrate?

- Set up a proportion comparing the amounts of ginger ale to orange juice concentrate.
- The first ratio shows the given recipe for the fruit punch.
- The second ratio shows the unknown amount of ginger ale as the variable g .
- Then solve the proportion.

$$\frac{\text{ginger ale}}{\text{orange juice concentrate}} = \overset{\text{1st ratio}}{\frac{32}{12}} = \overset{\text{2nd ratio}}{\frac{g}{30}}$$

$$\begin{aligned} \frac{g}{30} &= \frac{32}{12} \\ \cancel{30} \cdot \frac{g}{\cancel{30}} &= 30 \cdot \frac{32}{12} \\ g &= \frac{30 \cdot 32}{12} = \frac{960}{12} \\ g &= 80 \end{aligned}$$

You should use 80 ounces of ginger ale for 30 ounces of frozen orange juice concentrate.

Solve.

7. Pecans cost \$8.25 for 3 pounds. What is the cost of 5 pounds of pecans?

$$\frac{\text{dollars}}{\text{pounds}} = \frac{\quad}{\quad} = \frac{c}{\quad}$$

$c = \underline{\hspace{2cm}}$

8. Mandy drove 90 miles in 2 hours at a constant speed. How long would it take her to drive 225 miles at the same speed?

$$\frac{\text{miles}}{\text{hours}} = \frac{\quad}{\quad} = \frac{\quad}{h}$$

$h = \underline{\hspace{2cm}}$

9. Last week Geraldo bought 7 pounds of apples for \$5.95. This week apples are the same price, and he buys 4 pounds. How much will he pay?

10. Aretha can type 55 words per minute. At that rate, how long will it take her to type a letter containing 935 words?

15. $n = 15$ 16. $m = 45$
 17. $c = 6$ 18. $s = 40$
 19. $e = 8.8$ 20. $v = 4.25$
 21. $a = 11.2$ 22. \$7.50
 23. 7 eggs

Practice C

1. $x = 21$ 2. $z = 20$
 3. $a = 36$ 4. $r = 65$
 5. $f = 82$ 6. $k = 66$
 7. $w = 21$ 8. $t = 35$
 9. $j = 85$ 10. $h = 51$
 11. $d = 11.9$ 12. $c = 133$
 13. $m = 6.3$ 14. $e = 104$
 15. $s = 25.9$

16. Possible answer: $\frac{40}{50} = \frac{64}{80}$
 17. Possible answer: $\frac{7}{56} = \frac{9}{72}$
 18. Possible answer: $\frac{15}{45} = \frac{50}{150}$
 19. 675 pounds 20. 66 pounds

Review for Mastery

1. 2; 2 2. 9; 9
 2;
 54;
 3 3. 10; 10
 10;
 60;
 15 4. $x = 12$
 5. $w = 42$ 6. $c = 10$
 7. $\frac{8.25}{3}$; 5; \$13.75
 8. $\frac{90}{2}$; 225; 5 hours
 9. \$3.40 10. 17 minutes

Challenge

	Do quantities increase or decrease?	Proportion	Answer
1.	both increase	40 gal; 10 d	50 gallons
2.	both decrease	80 lb; 2 yd	8 pounds
3.	both increase	$2.5 \text{ c}; \frac{x \text{ c}}{6}$	3.75 cups
4.	both increase	$\frac{1 \text{ in}}{60 \text{ mi}}$	5 inches
5.	both increase	$\frac{4}{\$1.50}; x$	\$3.75

Problem Solving

1. 9.6, or \$9.60 2. 80 grams
 3. 16 inches
 4. 1,015 pounds of honey
 5. C 6. J
 7. B 8. H

Reading Strategies

1. yes 2. no
 3. yes 4. no
 5. If the cross products of two ratios are equal, the ratios form a proportion.

Puzzles, Twisters & Teasers

1. A 2. L
 3. L 4. T
 5. H 6. E
 7. F 8. A
 9. N 10. S
 11. L 12. E
 13. F 14. T

ALL THE FANS LEFT