

Good morning! Check your homework:

HW Page 23

- 1. 6
- 3. 30
- 5. 24
- 7. 3
- 9. 1

Got something wrong? Re-work it now!

Answers to Unit 2 Practice Test

1. 4

3. -24

5. -18

7. -2

9. 3

17.  $W = 2$ ,  $L = 12$ 19.  $\{30, 32, 34\}$ 

21. D.

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## 2-6 Unit Rates, Ratios, and Solving Proportions

## Vocabulary

**Ratio-** A ratio is a comparison of two numbers by division.  
 The ratio of a to b is  $\frac{a}{b}$  or  $\frac{a}{b}$  where  $b \neq 0$ .

**Unit Rate-** A unit rate is a rate with denominator of 1.  
 Examples: 12 pencils for 36¢ =  $\frac{36}{12} = \frac{3}{1} = 3¢$  / pencil

**Example 1: Using Unit Rates to Compare Pricing**

To find a unit rate, make a fraction from the ratio. Then reduce by dividing to get the denominator to 1.

Use the unit rate to find out which bottle has the lowest price per ounce.

1.  $\frac{.72}{16} = \frac{.045}{1 \text{ oz}}$



16 oz. for \$.72

2.  $\frac{1.20}{32} = \frac{.0375}{1 \text{ oz}}$



32 oz. for \$1.20

3.  $\frac{1.60}{64} = \frac{.025}{1 \text{ oz}}$



64 oz. for \$1.60

**✓ Understanding Check**

Main Street Florist sells 24 roses for \$24.60. Fresh Flowers sell 6 roses for \$7.50. Which florist has the lowest unit rate (price per rose)?

$\frac{24.60}{24} = \frac{1.025}{1 \text{ rose}}$

24 roses for \$24.60

$\frac{7.50}{6} = \frac{1.25}{1 \text{ rose}}$

6 roses for \$7.50

Main Street Florist sells 24 roses for \$24.60. Fresh Flowers sell 6 roses for \$7.50. Which florist has the lowest unit rate (price per rose).



24 roses for \$24.60

$$\frac{24.60}{24} = 1.025 / \text{rose}$$

↑  
Cheaper



6 roses for \$7.50

$$\frac{7.50}{6} = 1.25 / \text{rose}$$

30

**Property: Cross Products of a Proportion**

If  $\frac{a}{b} = \frac{c}{d}$ , then  $ad = bc$

Example:

$$\frac{4}{8} = \frac{3}{6}, \quad \begin{array}{l} 4 \cdot 6 = 8 \cdot 3 \\ 24 = 24 \end{array}$$

**Example 2: Solving Proportions**

1.  $\frac{t}{9} = \frac{5}{6}$

Step 1: cross multiply

$$6t = 45$$

Step 2: SOLVE

$$t = \frac{45}{6} = 7.5$$

Step 3:

2.  $\frac{x}{8} = \frac{5}{6}$

$$6x = 40$$

$$x = \frac{40}{6} = \frac{20}{3}$$

3.  $\frac{y}{12} = \frac{4}{7}$

$$7y = 48$$

$$y = \frac{48}{7}$$

4.  $\frac{4}{7} = \frac{18}{m}$  (Hint: You can reduce first)

$$63m = 270$$

$$7m = 30$$

$$m = \frac{30}{7} = 4.28571428\ldots$$

**Understanding Check**

a.  $\frac{a}{8} = \frac{4}{3}$

$$3a = 32$$

$$a = \frac{32}{3}$$

b.  $\frac{x}{6} = \frac{7}{2}$

$$2x = 42$$

$$x = 21$$

c.  $\frac{2}{9} = \frac{m}{4}$

$$8 = 9m$$

$$\frac{8}{9} = m$$

d.  $\frac{9}{11} = \frac{16}{x}$

$$9x = 176$$

$$x = \frac{176}{9}$$

a. $32/3$
b. 21
c. $8/9$
d. $176/9$