

# Solving Rates and Ratios Problems Several Ways

## **Consider the Example:**

1. You want to purchase songs from a song download site. The site offers 5 songs for \$6. Find the price you would need to pay for 15 songs.

Method #1: One-Step Equivalent Ratio

Method #2: Two-Step Equivalent Ratio (Find the Unit Price First)

Method 3: Set up Equivalent Ratios and Cross Multiply

**Consider the Example:**

2. You want to purchase songs from a song download site. The site offers 5 songs for \$6. Find the number of songs you can buy for \$50.

**\*\*Method #2: Two-Step Equivalent Ratio (Find the Unit Price First)**

**Method 3: Set up Equivalent Ratios and Cross Multiply**

**Got It?**

1.  $\frac{14}{x} = \frac{8}{9}$

2.  $\frac{3.5}{7} = \frac{6.15}{x}$

# Solving Rates and Ratios Problems Several Ways

## Consider the Example:

1. You want to purchase songs from a song download site. The site offers 5 songs for \$6. Find the price you would need to pay for 15 songs.

### Method #1: One-Step Equivalent Ratio

$$\frac{\$6}{5 \text{ songs}} = \frac{\$18}{15 \text{ songs}}$$

*(Note: Handwritten arrows show \$6 \times 3 = \\$18\$ and \$5 \times 3 = 15\$)*

### Method #2: Two-Step Equivalent Ratio (Find the Unit Price First)

$$\frac{\$6}{5 \text{ songs}} = \frac{\$1.20}{1 \text{ song}} = \frac{\$18}{15 \text{ songs}}$$

*(Note: Handwritten arrows show \$6 \div 5 = \\$1.20\$ and \$1.20 \times 15 = \\$18\$)*

### Method 3: Set up Equivalent Ratios and Cross Multiply

$$\frac{\$6}{5 \text{ songs}} = \frac{x}{15 \text{ songs}}$$

*(Note: Handwritten circles around \$6\$ and \$15\$ songs, and \$5\$ songs and \$x\$)*

$$\begin{array}{r|l} 5 \cdot x & = & 90 \\ \div 5 & & \div 5 \\ \hline x & = & \$18 \end{array}$$

**Consider the Example:**

2. You want to purchase songs from a song download site. The site offers 5 songs for \$6. Find the number of songs you can buy for \$50.

~~\*\*Method #2: Two-Step Equivalent Ratio (Find the Unit Price First)~~

$$\frac{\$6}{5 \text{ songs}} = \frac{\$1.20}{1 \text{ song}} = \frac{\$50}{?}$$

*(Note: Arrows indicate dividing \$6 by 5 to get \$1.20, and then dividing \$50 by \$1.20 to find the unknown.)*

Method 3: Set up Equivalent Ratios and Cross Multiply

$$\frac{\$6}{5 \text{ songs}} = \frac{\$50}{x}$$

*(Note: The original ratios are crossed out and replaced with the simplified ratios.)*

$$250 = 6 \cdot x$$
$$\div 6 \quad \div 6$$
$$41.\bar{6} = x$$

41 Songs

**Got It?**

1.  $\frac{14}{x} = \frac{8}{9}$

$$8x = 126$$
$$\div 8 \quad \div 8$$

x = 15.75

2.  $\frac{3.5}{7} = \frac{6.15}{x}$

$$43.05 = 3.5 \cdot x$$
$$\div 3.5 \quad \div 3.5$$

12.3 = x