5.3 Writing Proportions

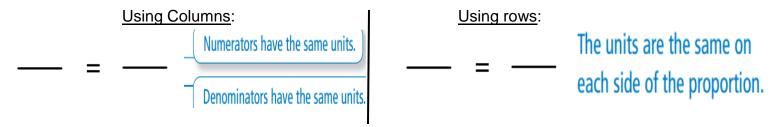**Objective:** 1. Write proportions.
2. Solve proportions using mental math.

Strategy for Writing a proportion: Making a table

One way to write a proportion is to use a table like below

	Last Month	This Month
Purchase	2 ringtones	3 ringtones
Total Cost	6 dollars	x dollars

Then use the columns or the rows to write a proportion.

Using Columns:

Numerators have the same units.

Denominators have the same units.

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

Using rows:

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

The units are the same on each side of the proportion.

EXAMPLE 1 Writing a Proportion

A chef increases the amounts of ingredients in a recipe to make a proportional recipe. The new recipe has 6 cups of black beans. Write a proportion that gives the number x of tomatoes in the new recipe.

Organize the information in a table.

Black Bean Soup

1.5 cups black beans
0.5 cup salsa
2 cups water
1 tomato
2 teaspoons seasoning

EXAMPLE 2 Solving Proportions Using Mental Math

Solve $\dfrac{3}{2} = \dfrac{x}{8}$

<u>**EXAMPLE 3 Solving Proportions Using Mental Math**</u>

In Example 1, how many tomatoes are in the new recipe?

Solve the proportion $\dfrac{1.5}{1} = \dfrac{6}{x}$.

cups black beans

tomatoes

On Your Own:

1. From example 1, write a different proportion that gives the number x of tomatoes in the new recipe.

2. Write a proportion that gives the amount y of water in the new recipe

Solve the proportion.

3. $\dfrac{5}{8} = \dfrac{20}{x}$

4. $\dfrac{7}{x} = \dfrac{14}{10}$

5. $\dfrac{21}{24} = \dfrac{x}{8}$

6. A school has 950 students. The ratio of female students to all students is $\dfrac{48}{95}$. Write and solve a proportion to find the number **_f_** of students who are female.