

5.8 Solving Ratio Problems

Friday, December 4, 2015

9:53 AM

Unit 5: Percent, Ratio, and Rate
5.8 Solving Ratio Problems

Math 8
 MacLean

A proportion is a statement that two ratios are equal.

You can often solve a problem involving ratios by setting up a proportion.

Example

In a box of red and blue marbles, the ratio of red marbles to blue marbles is 3:4. If there are 48 blue marbles, how many red marbles are there?

Let r represent the number of red marbles.

Then:
 In fraction form: $\frac{r}{48} = \frac{3}{4}$

Hint!

It is easier to solve the proportion when the variable is in the first term position! letter

To find the value of r , first isolate r by multiplying each side of the proportion by 48.

$$\cancel{48} \times \frac{r}{\cancel{48}} = \frac{3}{4} \times 48 \quad \text{OR} \quad \frac{r}{\cancel{48}} = \frac{3}{4} \Rightarrow r = \frac{3 \times 48}{4}$$

$$r = \frac{3 \times 48}{4} = 36$$

There are 36 red marbles.

Try These

1. In a recycle drive last week, Mr. Wiley's class collected bottles and recycled some of them. The ratio of bottles recycled to bottles collected was 3:4. This week, Mr. Wiley's class collected 24 bottles. Mr. Wiley told the students that the ratio of bottles recycled to bottles collected was the same as the previous week. How many bottles were recycled this week?

recycled : collected = recycle : collected

$$3:4 = r:24$$

There were 18 bottles recycled this week.

$$24 \times \frac{3}{4} = \frac{r}{\cancel{24}} \times \cancel{24}$$

$$r = \frac{24 \times 3}{4}$$

$$r = 18$$

OR

$$4 \times 6 = 24$$

$$3 \times 6 = 18$$

$$r = 18$$

2. Find the value of the variable:

$$\begin{aligned} 5:x &= 40:56 & \rightarrow & x:5 = 56:40 \\ \frac{5}{x} &= \frac{40}{56} & \cancel{5} \times \frac{x}{\cancel{5}} &= \frac{56}{40} \times 5 & \text{OR } 5 \times \underline{8} &= 40 \\ & & x &= \frac{56 \times 5}{40} & 56 \div 8 &= \textcircled{7} \\ & & \textcircled{x=7} & & \end{aligned}$$

Assignment: 5.5-5.8 Review - due in class
hand in to the box

When you are finished:

HW p. 284 #4 ace, 5 def, 7, 9, 15
p 291 #4, 6, 8, 10, 14