

AIM: 7-1 Introduction to Ratios

Name _____
Ms. Piccolo

Date _____
Math 6 - Period _____

Vocabulary:

Ratio - A comparison of two numbers. **Fractions**

Equivalent ratios - Two ratios that have the same value when simplified.

Proportion - An equation that shows two ratios are equivalent.

Cross products - Show whether ratios are equivalent. If $\left(\frac{a}{b} = \frac{c}{d}\right)$, then $ad = bc$.



KEY CONCEPT 1: Writing Ratios **3 different ways!**

	Words	Numbers
To	students <u>to</u> teachers	25 <u>to</u> 1
Fraction	$\frac{\text{students}}{\text{teachers}}$	$\frac{25}{1}$
Colon	students <u>:</u> teachers	25 <u>:</u> 1

} equivalent ratios

Example:

- 1) At the 6th grade school dance there are 120 boys, 80 girls, and 14 adults.
 - a) Write the ratio of the number of boys to the number of girls 120 to 80
 - b) Write the same ratio in another way $\frac{120}{80}$ or 120:80 (3:2)
 - c) Write the ratio of the number of girls to the number of adults 80 to 14
 - d) Write the same ratio in another way $\frac{80}{14}$ or 80:14
 - e) Write the ratio of the total number of students to the number of adults 200 to 14

B: 120
G: 80
+
200 total

KEY CONCEPT 2: Equivalent Ratios and Cross Products

We can use different methods to show that two ratios are equivalent:

- 1) Find LCD + compare numerators
- 2) Simplify to lowest terms
- 3) Cross Products "butterfly method"

Cross Products:

a) $2 : 5$ and $10 : 25$

$\frac{2}{5} \stackrel{?}{=} \frac{10}{25}$

$2(25) \stackrel{?}{=} 10(5)$
 $50 = 50 \checkmark$

b) $\frac{6}{10} \stackrel{?}{=} \frac{9}{30}$

$6(30) \stackrel{?}{=} 9(10)$
 $180 \neq 90$

\neq not equal to

c) $4 : 7$ and $5 : 6$

$\frac{4}{7} \stackrel{?}{=} \frac{5}{6}$

$4(6) \stackrel{?}{=} 5(7)$
 $24 \neq 35$

d) $\frac{3}{12} \stackrel{?}{=} \frac{4}{16}$

$3(16) \stackrel{?}{=} 4(12)$
 $48 = 48 \checkmark$



Now You Try! Read carefully!

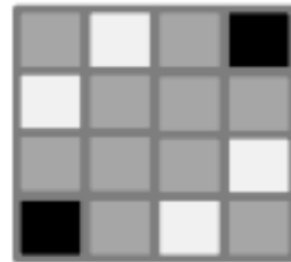
1) In the cafeteria, 100 milk cartons were put out for breakfast. At the end of breakfast, 27 milk cartons remained. total (left over)

a) What is the ratio of milk cartons taken to the total amount? 73 : 100
 $100 - 27 = \underline{73}$ taken

b) What is the ratio of milk cartons remaining to milk cartons taken? 27 : 73

2) Using the floor tiles shown below, write two (2) different ratios related to the image.

- Write each ratio in the form $A : B$ or A to B
- Describe each ratio relationship in words.



Ratio 1: 4 : 2

In words: For every 4 white tiles, there are 2 black tiles

Ratio 2: 10 : 2

In words: For every 10 gray tiles, there are 2 black tiles

3) Jack's family is staying at the lake house this weekend for a family reunion. He is in charge of making homemade pancakes for the entire group. The pancake mix requires 2 cups of flour for every 10 pancakes.

- a) Write a ratio to show the relationship between the number of cups of flour and the number pancakes made.

Ratio: 2 : 10

Simplest Form: 1 : 5 \rightarrow $\frac{1}{5}$

- b) Use the value of the ratio to fill in the following multiplicative comparison statements.

The number of pancakes made is 5 times the amount of cups of flour needed. $5 \cdot 2 = 10$

The amount of cups of flour needed is $\frac{1}{5}$ of the number of pancakes made.

$\frac{1}{5}$ of 10 $\rightarrow \frac{1}{5} \cdot 10 = \frac{10}{5} = 2$ cups

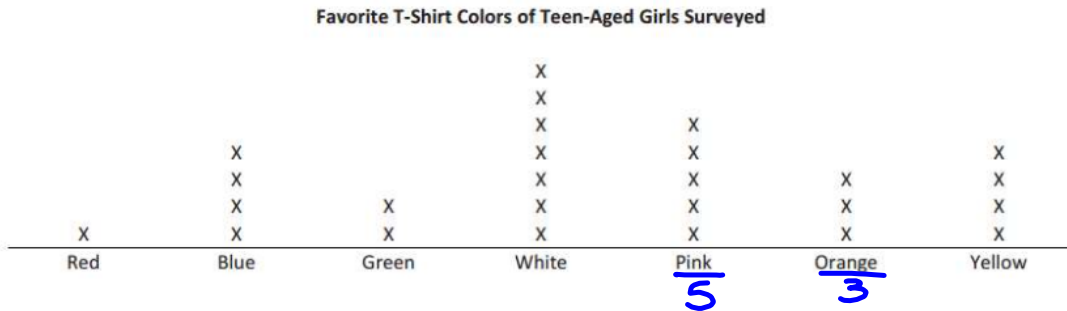
- c) If Jack has to make 70 pancakes, how many cups of flour will he have to use?

$$\begin{array}{l} C: \frac{2}{10} = \frac{?}{70} \\ P: \end{array}$$

$\cdot 7$

14 cups of flour
($70 \div 5 = 14$)

- 4) A t-shirt manufacturing company surveyed teen-aged girls on their favorite t-shirt color to guide the company's decisions about how many of each color t-shirt they should design and manufacture. The results of the survey are shown below.



- a) Describe a ratio relationship, in the context of the story above, for which the ratio is 3 to 5.

Orange: Pink

For every 3 girls who favors orange t-shirts, there are 5 girls who favor pink t-shirts.

- b) For each ratio relationship given, fill in the ratio it is describing:

DESCRIPTION OF THE RATIO RELATIONSHIP	RATIO
For every 7 white t-shirts they manufacture, they should manufacture 4 yellow t-shirts. The ratio of the number of white t-shirts to the number of yellow t-shirts should be...	7:4
The ratio of the number of girls who like a white t-shirt best to the number of girls who like a colored t-shirt best is...	7:19
The ratio of the number of girls who chose blue or green as their favorite to the number of girls who chose pink or red as their favorite is...	6:6
Three out of every 26 t-shirts they manufacture should be orange. The ratio of the number of orange t-shirts to the total number of t-shirts is...	3:26