

## Lesson 7: Associated Ratios and the Value of a Ratio

### Classwork

#### Example 1

Which of the following correctly models that the number of red gumballs is  $\frac{5}{3}$  the number of white gumballs?

a. Red

White

b. Red

White

c. Red

White

d. Red

White

#### Example 2

The duration of two films are modeled below.

Film A

Film B

a. The ratio of the length of Film A to the length of Film B is 5 : 7.

b. The length of Film A is  $\frac{\boxed{5}}{\boxed{7}}$  of the length of Film B.

c. The length of Film B is  $\frac{\boxed{7}}{\boxed{5}}$  of the length of Film A.

## Exercise 1

Sammy and Kaden went fishing using live shrimp as bait. Sammy brought 8 more shrimp than Kaden brought. When they combined their shrimp they had 32 shrimp altogether.

- a. How many shrimp did each boy bring?

$$\begin{array}{r} 32 \\ - 8 \\ \hline 24 \end{array} \div 2 = 12$$

Kaden bought 12 shrimp. Sammy bought 20 shrimp.

$$\begin{array}{r} 12 \\ + 8 \\ \hline 20 \end{array}$$

- b. What is the ratio of the number of shrimp Sammy brought to the number of shrimp Kaden brought?

$$20:12$$

- c. Express the number of shrimp Sammy brought as a fraction of the number of shrimp Kaden brought.

$$\frac{20}{12}$$

- d. What is the ratio of the number of shrimp Sammy brought to the total number of shrimp?

$$20:32$$

- e. What fraction of the total shrimp did Sammy bring?

$$\frac{20}{32}$$

## Exercise 2

A food company that produces peanut butter decides to try out a new version of its peanut butter that is extra crunchy, using twice the number of peanut chunks as normal. The company hosts a sampling of its new product at grocery stores and finds that 5 out of every 9 customers prefer the new extra crunchy version.

- a. Let's make a list of ratios that might be relevant for this situation.
- The ratio of number preferring new extra crunchy to total number surveyed is 5 to 9.
  - The ratio of number preferring regular crunchy to the total number surveyed is 4 to 9.
  - The ratio of number preferring regular crunchy to number preferring new extra crunchy is 4 to 5.
  - The ratio of number preferring new extra crunchy to number preferring regular crunchy is 5 to 4.
- b. Let's use the value of each ratio to make multiplicative comparisons for each of the ratios we described here.
- The number preferring new extra crunchy is  $\frac{5}{9}$  of the total number surveyed.
  - The number preferring regular crunchy is  $\frac{4}{9}$  of the total number surveyed.
  - The number preferring regular crunchy is  $\frac{4}{5}$  of those preferring new extra crunchy.
  - The number preferring new extra crunchy is  $\frac{5}{4}$  of those preferring regular crunchy.
- c. If the company is planning to produce 90,000 containers of crunchy peanut butter, how many of these containers should be the new extra crunchy variety, and how many of these containers should be the regular crunchy peanut butter? What would be helpful in solving this problem? Does one of our comparison statements above help us?

5:4

The company should produce 50,000 containers of new crunchy Peanut butter and 40,000 containers of regular crunchy peanut butter.



90,000

E.)  $10,000 \cdot 5 = 50,000$

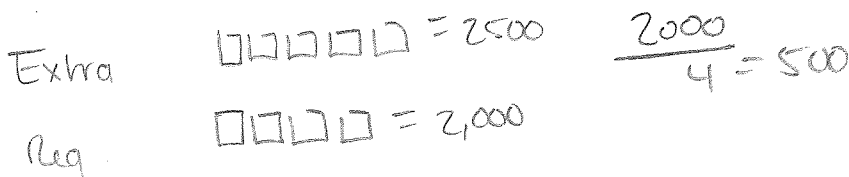
R.)  $10,000 \cdot 4 = 40,000$

Try these next scenarios:

- d. If the company decides to produce 2,000 containers of regular crunchy peanut butter, how many containers of new extra crunchy peanut butter would it produce?

5:4

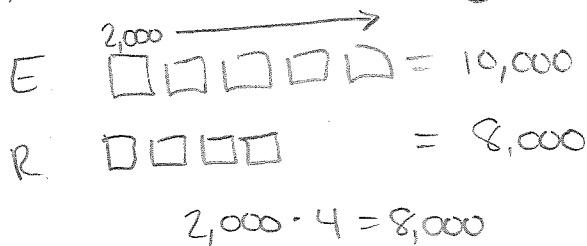
2,500 new extra crunchy peanut butter containers.



- e. If the company decides to produce 10,000 containers of new extra crunchy peanut butter, how many containers of regular crunchy peanut butter would it produce?

5:4  
E:R

$\frac{10,000}{5} = 2,000$  8,000 regular crunchy peanut butter containers.



- f. If the company decides to only produce 3,000 containers of new extra crunchy peanut butter, how many containers of regular crunchy peanut butter would it produce?

5:4

2,400 regular crunchy peanut butter containers.

