

# 5.1 Ratios

**Essential Question** How can you tell whether two recipes make the same mixture?

A **ratio** is a comparison of two quantities using division.

Ratios			
4 ft	3 c	20 sec	120 mi
2 ft	5 c	45 sec	80 mi

## 1 ACTIVITY: Comparing Recipes

Work with a partner.

You are making some homemade hand lotion. You find three recipes.

Do the recipes make the same lotion?  
How can you tell?



### Recipe 1

Melt these ingredients over low heat:

$\frac{2}{3}$  cup of apricot oil

$\frac{1}{3}$  cup of cocoa butter

1 teaspoon of lanolin

$\frac{1}{2}$  ounce of grated beeswax

When cool, add the following:

$\frac{2}{3}$  cup of rosewater

$\frac{1}{3}$  cup of aloe vera gel

2 drops of rose oil

1 Vitamin E capsule

Whip together until the mixture resembles lotion.

### Recipe 2

Melt these ingredients over low heat:

1 cup of apricot oil

$\frac{1}{2}$  cup of cocoa butter

$1\frac{1}{2}$  teaspoons of lanolin

$\frac{3}{4}$  ounce of grated beeswax

When cool, add the following:

1 cup of rosewater

$\frac{1}{2}$  cup of aloe vera gel

3 drops of rose oil

$1\frac{1}{2}$  Vitamin E capsules

Whip together until the mixture resembles lotion.

### Recipe 3

Melt these ingredients over low heat:

$1\frac{1}{2}$  cups of apricot oil

$\frac{2}{3}$  cup of cocoa butter

2 teaspoons of lanolin

1 ounce of grated beeswax

When cool, add the following:

$1\frac{1}{2}$  cups of rosewater

$\frac{2}{3}$  cup of aloe vera gel

4 drops of rose oil

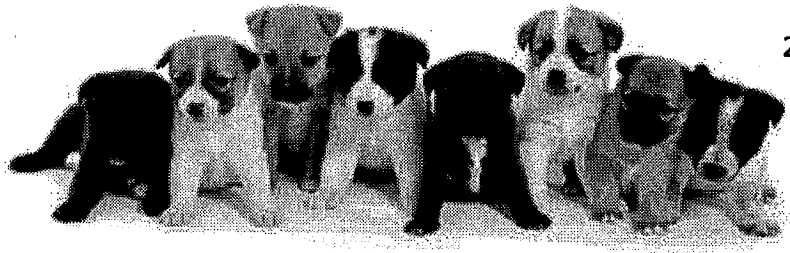
2 Vitamin E capsules

Whip together until the mixture resembles lotion.

**ERROR ANALYSIS** Describe and correct the error in writing an equivalent ratio.

20.  ~~$\frac{2}{3} = \frac{2+4}{3+4} = \frac{6}{7}$~~

21.  ~~$\frac{2}{3} = \frac{2 \times 2}{3 \times 3} = \frac{4}{9}$~~



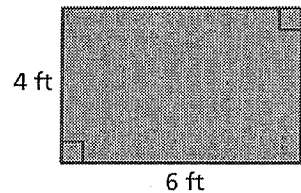
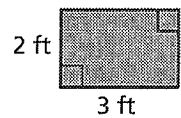
22. **PUPPY** One way to make puppy food is to soften three parts dog food with one part water. How much dog food can be softened with 16 cups of water?

23. **CHECKERS** During a checkers game, there are 16 pieces left. The ratio of black to red is 3 : 5. How many black pieces are on the board? Explain how you found your answer.

24. **SCHOOL PLAY** There are 48 students in a school play. The ratio of boys to girls is 5 : 7. How many boys are in the school play? Explain how you found your answer.

25. **GEOMETRY** Use the blue and green rectangles.

a. Find the ratio of the length of the blue rectangle to the length of the green rectangle. Repeat this for width, perimeter, and area.



b. Compare and contrast your ratios in part (a).

Player	Hits	At Bats
1	30	48
2	16	40
3	20	32
4	36	60

26. **SOFTBALL** The table shows the number of hits and at bats for four softball players.

- Write each player's batting average as a ratio of hits to at bats.
- Did the player with the most hits have the best batting average? Explain.

27. ~~Reasoning~~ There are 12 boys and 10 girls in your gym class. If 6 boys joined the class, how many girls would need to join for the ratio to remain the same?



**Fair Game Review** What you learned in previous grades & lessons

Divide. **SECTION 3.4**

28.  $13.8 \div 3$

29.  $16.45 \div 5$

30.  $53.13 \div 21$

31.  $19.214 \div 13$

32. **MULTIPLE CHOICE** Which numbers are ordered from least to greatest?

**SECTION 4.3**

(A) 0.83,  $\frac{17}{20}$ , 86%,  $\frac{7}{8}$ , 87.25%

(B) 0.83,  $\frac{17}{20}$ , 86%, 87.25%,  $\frac{7}{8}$

(C)  $\frac{17}{20}$ , 0.83, 86%, 87.25%,  $\frac{7}{8}$

(D)  $\frac{7}{8}$ , 87.25%, 86%, 0.83,  $\frac{17}{20}$