3.5 Write Ratios and Proportions



Before

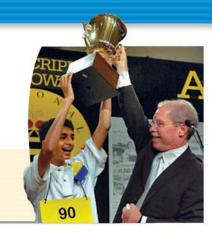
You solved equations involving division.

Now

You will find ratios and write and solve proportions.

Why?

So you can find a ratio involving a contest, as in Ex. 46.



Key Vocabulary

- ratio
- proportion
- simplest form, p. 912

Throughout this book you have been using rates, such as 50 miles per hour. A rate is a special type of *ratio*.

KEY CONCEPT

For Your Notebook

Ratios

A **ratio** uses division to compare two quantities. You can write the ratio of two quantities *a* and *b*, where *b* is not equal to 0, in three ways.

$$a$$
 to b

$$a$$
: b

$$\frac{a}{b}$$

Each ratio is read "the ratio of a to b." Ratios should be written in simplest form.

EXAMPLE 1

Write a ratio

VOLLEYBALL A volleyball team plays 14 home matches and 10 away matches.

- **a.** Find the ratio of home matches to away matches.
- **b.** Find the ratio of home matches to all matches.

Solution

a.
$$\frac{\text{home matches}}{\text{away matches}} = \frac{14}{10} = \frac{7}{5}$$

b.
$$\frac{\text{home matches}}{\text{all matches}} = \frac{14}{14 + 10} = \frac{14}{24} = \frac{7}{12}$$



GUIDED PRACTICE

for Example 1

Derek and his brother decide to combine their CD collections. Derek has 44 CDs, and his brother has 52 CDs. Find the specified ratio.

- 1. The number of Derek's CDs to the number of his brother's CDs
- **2.** The number of Derek's CDs to the number of CDs in the entire collection