3.5 Write Ratios and Proportions

TEKS A.3.A, A.4.A, A.7.B, A.7.C

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 $\qquad a:b \qquad \dfrac{a}{b}$

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

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

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