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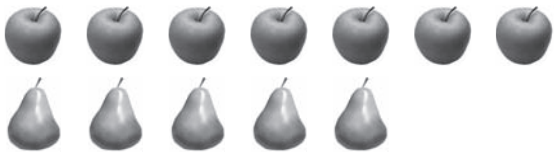
CHAPTER

# 4 Ratio

## Lesson 4.1 Comparing Two Quantities

**Complete.**

*Example*



7 : 5 and 5 : 7 are called **ratios**. 5 and 7 are the **terms** of these ratios.

The ratio of the number of apples to the number of pears is 7 : 5.

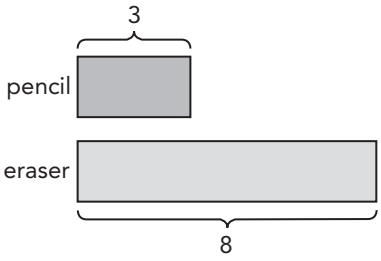
The ratio of the number of pears to the number of apples is 5 : 7.

**1.**

The ratio of the number of saucers to the number of cups is _____ : _____.

The ratio of the number of cups to the number of saucers is _____ : _____.

**2.**




The ratio of the number of pencils to the number of erasers is _____ : _____.

The ratio of the number of erasers to the number of pencils is _____ : _____.

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**State whether each of the following can be expressed as a ratio.**

*Example*

9 in. and 3 ft Yes

2 yd and 4 g No

9 inches and 3 feet are measurements of length. 9 inches and 3 feet can be expressed in the same unit. So, 9 inches and 3 feet can be expressed as a ratio.

2 yards is a measurement of length. 4 grams is a measurement of mass. 2 yards and 4 grams cannot be expressed in the same unit. So, 2 yards and 4 grams cannot be expressed as a ratio.

**3.** 12 cm and 3 m _____

**4.** 1 mL and 2 kg _____

**5.** 7 in.$^2$ and 1 lb _____

**6.** 3 h and 11 min _____

**Complete.**

*Example*

5 m : 19 cm = 500 cm : 19 cm

= 500 : 19

*Think*:

*1 m = 100 cm*

*5 m = 500 cm*

**7.** 13 mL : 1.2 L = _____ mL : _____ mL

= _____ : _____

*Think*:

*1 L = 1,000 mL*

*1.2 L = _____ mL*

**8.** 31 oz : 2 lb = _____ oz : _____ oz

= _____ : _____

*Think*:

*1 lb = 16 oz*

*2 lb = _____ oz*

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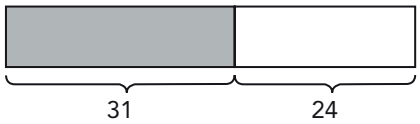
**Solve. You may use models to help you.**

*Example*

There are 31 U.S. stamps and 24 foreign stamps in a collection.

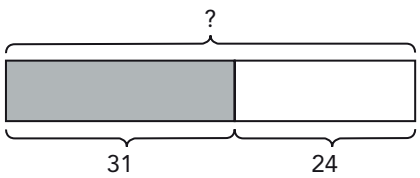
**a)** Find the ratio of the number of U.S. stamps to the number of foreign stamps.




The ratio of the number of U.S. stamps to the number of foreign stamps

is 31 : 24.

**b)** Find the ratio of the number of U.S. stamps to the total number of stamps.




Total number of stamps = 31 + 24

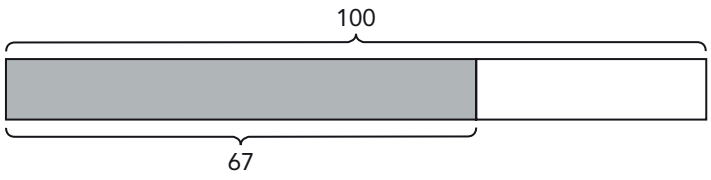
= 55

The ratio of the number of U.S. stamps to the total number of stamps

is 31 : 55.

**9.** Of the 100 people at a concert, 67 are adults and the rest are children.

**a)** Find the ratio of the total number of people to the number of adults.




The ratio of the total number of people to the number of adults at the

concert is _____ : _____.

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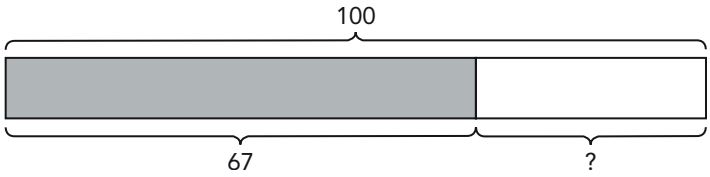
**b)** Find the ratio of the number of adults to the number of children.




Number of children = _____ − _____

= _____

The ratio of the number of adults to the number of children at the concert is _____ : _____.

The ratio of the number of children to the total number of people at the concert is _____ : _____.

**10.** Adam made 19 chicken casseroles and 36 tuna casseroles.

**a)** Find the ratio of the number of chicken casseroles to the number of tuna casseroles.

**b)** Find the ratio of the number of chicken casseroles to the total number of casseroles.

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**11.** Of the 120 athletes at a sports banquet, 71 are swimmers and the rest are tennis players.

**a)** Find the ratio of the total number of athletes to the number of swimmers.

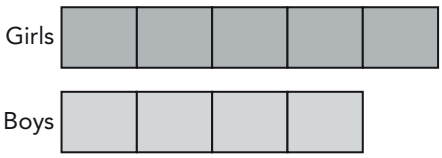
**b)** Find the ratio of the number of tennis players to the number of swimmers.

**Solve. You may draw a model to help you.**

*Example*

The ratio of the number of girls to the number of boys at a movie is 5 : 4.

**a)** What fraction of the children at the movie are girls?




Total number of children = 5 + 4

= 9 units

$\frac{5}{9}$ of the children at the movie are girls.

**b)** What fraction of the children at the movie are boys?

$\frac{4}{9}$ of the children at the movie are boys.

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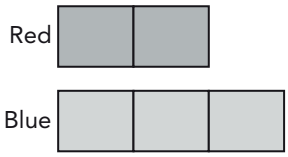
**12.** The ratio of the number of red highlighters to the number of blue highlighters is 2 : 3.

**a)** What fraction of the highlighters are red?




Total number of highlighters = _____ + _____

= _____ units

_____ of the highlighters are red.

**b)** What fraction of the highlighters are blue?

_____ of the highlighters are blue.

**13.** A bracelet has 12 orange beads and 7 white beads.

**a)** Find the ratio of the number of orange beads to the number of white beads.

**b)** What fraction of the beads are white?

**14.** There are science books and math books on a shelf. The ratio of the number of science books to the number of math books is 4 : 9.

**a)** Find the ratio of the number of math books to the total number of books.

**b)** What fraction of the books are science books?

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**Solve.**

*Example*

The area of square A is 36 square inches and the area of square B is 9 square inches.

**a)** How many times the area of square B is the area of square A?

$$\frac{\text{Area of square A}}{\text{Area of square B}} = \frac{36}{9} = 4$$

The area of square A is 4 times the area of square B.

**b)** How many times the area of square A is the area of square B?

$$\frac{\text{Area of square B}}{\text{Area of square A}} = \frac{9}{36} = \frac{1}{4}$$

The area of square B is $\frac{1}{4}$ times the area of square A.

**15.** Kelvin saves $60 a day. Al saves $90 a day.

**a)** How many times Kelvin's savings are Al's savings?

**b)** How many times Al's savings are Kelvin's savings?

**16.** Joseph uses 30 grams of sugar and 24 grams of butter for making pancakes.

**a)** How many times the amount of sugar is the amount of butter?

**b)** How many times the amount of butter is the amount of sugar?