Understanding Ratios

UNDERSTAND A **ratio** can compare a part to a part, a part to the whole, or the whole to a part. The word "to" compares the two terms in a ratio. You can write a ratio in different ways.

Write the ratio of squares to all shapes in three different ways.

Write the ratio in words.

Count the number of squares.

There are 3 squares.
Count the total number of shapes. There are 8 shapes in all.
Write the ratio using the word "to."

▶ The ratio of squares to all shapes is "three to eight."

Write the ratio using a symbol.
A colon (:) is a symbol used to write a ratio.

▶ The ratio of squares to all shapes is 3:8.

Write the ratio using a fraction.

$\frac{3}{8}$ ← Write the first term in the numerator.
← Write the quantity of all terms in the denominator.

▶ The ratio of squares to all shapes is $\frac{3}{8}$.

⊏ Connect

For every fish Nate caught fishing from the shore, Brian caught four fish from his boat in the lake. Write a ratio to represent the situation. Then draw a picture to represent the situation.

1

The situation compares two quantities. It compares the number of fish that Nate caught to the number of fish that Brian caught.

The situation represents a ratio.

2

Write a ratio for the situation.

For every fish Nate caught, Brian caught four fish.

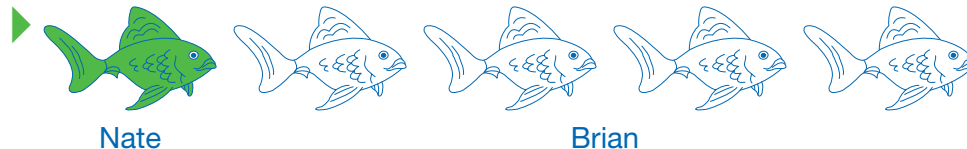This is the same as saying that Nate caught 1 fish for every 4 fish Brian caught.

▸ The ratio of the number of fish Nate caught to the number of fish Brian caught is 1 to 4, 1:4, or $\frac{1}{4}$.

3

Draw a picture to represent the situation.

Nate caught 1 fish for every 4 fish Brian caught.

Draw 1 fish for Nate and 4 fish for Brian.

▸

Nate   Brian

MODEL

For every two white roses in a bouquet, the florist uses three red roses. Draw a picture to represent the situation.
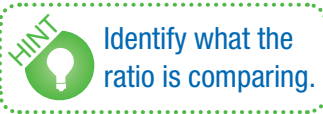
Practice

Use the figures below to write each ratio three ways.

1. green to white figures

_____

2. circles to stars

_____

HINT — Identify what the ratio is comparing.

3. green figures to total figures

_____

4. green stars to white stars

_____

5. white circles to white figures

_____

6. green circles to green stars

_____

Use the following address to write each ratio three ways.

36541 Riverside Road

7. numbers to letters

_____

8. vowels to consonants

_____

9. consonants to numbers

_____

10. letters to complete address

_____

11. complete address to numbers

_____

12. vowels to letters

_____

REMEMBER The order is important in a ratio.

Make a drawing to show each ratio. Then write the ratio three ways.

13. The ratio of books to mystery books on a shelf is nine to two.

_____

14. The ratio of adults to children at the park is three to ten.

_____

15. The ratio of paws to tails on a tiger is four to one.

_____

Write a real-world context for each ratio.

16. five to three

_____

_____

17. 2 to 7

_____

_____

18. 4:12

_____

_____

19. $\frac{6}{1}$

_____

_____

Solve.

20. Out of 28 students in the class, 21 wore sneakers to school. What is the ratio of students who wore sneakers to those who did not wear sneakers?

_____

21. Of the 18 students at a dance camp, 6 are boys. What is the ratio of girls to students at the camp?

_____

22. **ANALYZE** The ratio of games the Falcons won to the games they lost is 7:5. What is the ratio of games won to the total number of games played? Explain.

_____

_____

_____

23. **WRITE MATH** Write three different ratios for the following situation. Explain what the ratios compare.

Kendra has 2 cats and 3 dogs.

_____

_____

_____