

# Simplifying Ratios

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 18

## Quick Review and Helpful Hints

A ratio compares two quantities. To simplify a ratio, divide *both* terms by their greatest common factor (GCF) – exactly like reducing a fraction. The simplified ratio has the same value but uses the smallest whole numbers. Keep the terms in the same order.

▶ **Example:** Simplify the ratio 18 : 24. **Work:** Find the GCF of 18 and 24. Both divide evenly by 6, and 6 is the largest such factor. Divide each term by 6:  $18 \div 6 = 3$  and  $24 \div 6 = 4$ . ★ **Answer:** 3 : 4



18 : 24 reduces to the ratio 3 : 4.

### Practice Problems

Write each ratio in simplest form.

- |                     |       |                      |       |
|---------------------|-------|----------------------|-------|
| 1. Simplify 4 : 8   | _____ | 8. Simplify 12 : 18  | _____ |
| 2. Simplify 10 : 15 | _____ | 9. Simplify 25 : 100 | _____ |
| 3. Simplify 9 : 12  | _____ | 10. Simplify 36 : 48 | _____ |
| 4. Simplify 20 : 25 | _____ | 11. Simplify 8 : 20  | _____ |
| 5. Simplify 14 : 21 | _____ | 12. Simplify 15 : 35 | _____ |
| 6. Simplify 16 : 24 | _____ | 13. Simplify 24 : 36 | _____ |
| 7. Simplify 30 : 45 | _____ | 14. Simplify 40 : 16 | _____ |

### Word Problems

15. A class has 12 boys and 18 girls. Write the ratio of boys to girls in simplest form. \_\_\_\_\_
16. A recipe uses 8 cups of flour for every 6 cups of sugar. Write the ratio of flour to sugar in simplest form. \_\_\_\_\_
17. A parking lot has 45 cars and 30 trucks. Write the ratio of trucks to cars in simplest form. \_\_\_\_\_
18. A bag holds 21 red marbles and 14 blue marbles. Write the ratio of red to blue in simplest form. \_\_\_\_\_



## Answer Keys

1.  $1 : 2$

2.  $2 : 3$

3.  $3 : 4$

4.  $4 : 5$

5.  $2 : 3$

6.  $2 : 3$

7.  $2 : 3$

8.  $2 : 3$

9.  $1 : 4$

10.  $3 : 4$

11.  $2 : 5$

12.  $3 : 7$

13.  $2 : 3$

14.  $5 : 2$

15.  $2 : 3$

16.  $4 : 3$

17.  $2 : 3$

18.  $3 : 2$

### Step-by-Step Explanations

**1.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is A ratio reduces just like a fraction. The GCF of 4 and 8 is 4, so divide both terms to get  $1 : 2$ . So the final answer is  $1 : 2$ .

**2.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Both terms share the factor 5. Dividing each by 5 gives  $2 : 3$ . So the final answer is  $2 : 3$ .

**3.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The GCF of 9 and 12 is 3:  $9 \div 3 = 3$  and  $12 \div 3 = 4$ , so  $3 : 4$ . So the final answer is  $3 : 4$ .

**4.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide both terms by 5 to reach  $4 : 5$ . So the final answer is  $4 : 5$ .

**5.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Seven divides both numbers:  $14 \div 7 = 2$  and  $21 \div 7 = 3$ , giving  $2 : 3$ . So the final answer is  $2 : 3$ .

**6.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The GCF of 16 and 24 is 8. Dividing both leaves  $2 : 3$ . So the final answer is  $2 : 3$ .

**7.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Both terms are multiples of 15, so  $30 : 45$  reduces to  $2 : 3$ . So the final answer is  $2 : 3$ .

**8.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide each term by the GCF 6 to get  $2 : 3$ . So the final answer is  $2 : 3$ .

**9.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Since 100 is four 25s, the GCF is 25 and the ratio reduces to  $1 : 4$ . So the final answer is  $1 : 4$ .

**10.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The GCF is 12:  $36 \div 12 = 3$  and  $48 \div 12 = 4$ , so  $3 : 4$ . So the final answer is  $3 : 4$ .

**11.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Both terms divide by 4:  $8 \div 4 = 2$  and  $20 \div 4 = 5$ , giving  $2 : 5$ . So the final answer is  $2 : 5$ .

**12.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Five is the shared factor:  $15 \div 5 = 3$  and  $35 \div 5 = 7$ , so  $3 : 7$ . So the final answer is  $3 : 7$ .

**13.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The GCF of 24 and 36 is 12, so the ratio simplifies to  $2 : 3$ . So the final answer is  $2 : 3$ .

**14.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide both by 8:  $40 \div 8 = 5$  and  $16 \div 8 = 2$ . Keep the order as written, so  $5 : 2$ . So the final answer is  $5 : 2$ .

**15.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Boys to girls is  $12 : 18$ . Both share 6, so it simplifies to  $2 : 3$  – read it as two boys for every three girls. So the final answer is  $2 : 3$ .

**16.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flour to sugar is  $8 : 6$ . Dividing both by 2 gives  $4 : 3$ . So the final answer is  $4 : 3$ .

**17.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Watch the order: trucks to cars means  $30 : 45$ , not  $45 : 30$ . Dividing by 15 gives  $2 : 3$ . So the final answer is  $2 : 3$ .

**18.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Red to blue is  $21 : 14$ . The GCF is 7, so it reduces to  $3 : 2$ . So the final answer is  $3 : 2$ .



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