

# Simplifying Ratios

Name: \_\_\_\_\_

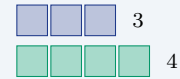
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## Quick Review and Helpful Hints

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

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2. Simplify 10 : 15

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3. Simplify 9 : 12

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4. Simplify 20 : 25

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5. Simplify 14 : 21

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6. Simplify 16 : 24

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7. Simplify 30 : 45

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8. Simplify 12 : 18

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9. Simplify 25 : 100

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10. Simplify 36 : 48

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11. Simplify 8 : 20

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12. Simplify 15 : 35

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13. Simplify 24 : 36

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14. Simplify 40 : 16

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## ◆ Word Problems

15. A class has 12 boys and 18 girls. Write the ratio of boys to girls in simplest form.

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16. A recipe uses 8 cups of flour for every 6 cups of sugar. Write the ratio of flour to sugar in simplest form.

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17. A parking lot has 45 cars and 30 trucks. Write the ratio of trucks to cars in simplest form.

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18. A bag holds 21 red marbles and 14 blue marbles. Write the ratio of red to blue in simplest form.

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## Answer Keys

- |                                       |  |  |
|---------------------------------------|--|--|
| 1. <input type="text" value="1 : 2"/> | 7. <input type="text" value="2 : 3"/>  | 13. <input type="text" value="2 : 3"/> |
| 2. <input type="text" value="2 : 3"/> | 8. <input type="text" value="2 : 3"/>  | 14. <input type="text" value="5 : 2"/> |
| 3. <input type="text" value="3 : 4"/> | 9. <input type="text" value="1 : 4"/>  | 15. <input type="text" value="2 : 3"/> |
| 4. <input type="text" value="4 : 5"/> | 10. <input type="text" value="3 : 4"/> | 16. <input type="text" value="4 : 3"/> |
| 5. <input type="text" value="2 : 3"/> | 11. <input type="text" value="2 : 5"/> | 17. <input type="text" value="2 : 3"/> |
| 6. <input type="text" value="2 : 3"/> | 12. <input type="text" value="3 : 7"/> | 18. <input type="text" value="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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