

# Factors, Multiples, GCF and LCM

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

## Quick Review and Helpful Hints

A *factor* divides a number evenly; a *multiple* is what you get by multiplying. The *GCF* (greatest common factor) is the largest factor two numbers share. The *LCM* (least common multiple) is the smallest multiple they share.

▶ **Example:** Find the GCF of 12 and 18. **Work:** Factors of 12: 1, 2, 3, 4, 6, 12. Factors of 18: 1, 2, 3, 6, 9, 18. The largest shared factor is 6. **★ Answer:** 6



Shared factors sit in the overlap.

### ◆ Practice Problems

Find the requested value.

- |                     |       |                                |       |
|---------------------|-------|--------------------------------|-------|
| 1. GCF of 6 and 9   | _____ | 8. GCF of 20 and 30            | _____ |
| 2. GCF of 12 and 18 | _____ | 9. LCM of 6 and 8              | _____ |
| 3. GCF of 8 and 12  | _____ | 10. GCF of 7 and 14            | _____ |
| 4. LCM of 3 and 4   | _____ | 11. LCM of 5 and 10            | _____ |
| 5. LCM of 4 and 6   | _____ | 12. GCF of 16 and 24           | _____ |
| 6. GCF of 10 and 15 | _____ | 13. Is 4 a factor of 20?       | _____ |
| 7. LCM of 2 and 5   | _____ | 14. First three multiples of 5 | _____ |

### ◆ Word Problems

15. Two ropes of 12 ft and 18 ft are cut into equal-length pieces. What is the longest possible piece? \_\_\_\_\_
16. Two buses leave every 4 and 6 minutes. After how many minutes do they leave together again? \_\_\_\_\_
17. A teacher has 9 pencils and 12 erasers for prize bags. Each bag must be identical, with no supplies left over. What is the greatest number of bags she can make? \_\_\_\_\_
18. Two medication reminders beep every 3 hours and every 5 hours. If they beep together now, in how many hours will they beep together again? \_\_\_\_\_



## Answer Keys

- |                                    |                                     |  |
|------------------------------------|-------------------------------------|--|
| 1. <input type="text" value="3"/>  | 7. <input type="text" value="10"/>  | 13. <input type="text" value="Yes"/>       |
| 2. <input type="text" value="6"/>  | 8. <input type="text" value="10"/>  | 14. <input type="text" value="5, 10, 15"/> |
| 3. <input type="text" value="4"/>  | 9. <input type="text" value="24"/>  | 15. <input type="text" value="6"/>         |
| 4. <input type="text" value="12"/> | 10. <input type="text" value="7"/>  | 16. <input type="text" value="12"/>        |
| 5. <input type="text" value="12"/> | 11. <input type="text" value="10"/> | 17. <input type="text" value="3"/>         |
| 6. <input type="text" value="5"/>  | 12. <input type="text" value="8"/>  | 18. <input type="text" value="15"/>        |

### 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 Shared factors of 6, 9: largest is 3. So the final answer is 3.
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 Largest shared factor of 12, 18 is 6. So the final answer is 6.
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 Shared factors of 8, 12: largest is 4. So the final answer is 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 Multiples: 3, 6, 9, 12... and 4, 8, 12; first shared is 12. So the final answer is 12.
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 4, 8, 12 and 6, 12; first shared is 12. So the final answer is 12.
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 Shared factors of 10, 15: largest is 5. So the final answer is 5.
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 2, 4, 6, 8, 10 and 5, 10; first shared is 10. So the final answer is 10.
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 Largest shared factor of 20, 30 is 10. So the final answer is 10.
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 6, 12, 18, 24 and 8, 16, 24; first shared is 24. So the final answer is 24.

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 7 divides both, so  $GCF = 7$ . So the final answer is 7.
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 5, 10 and 10;  $LCM = 10$ . So the final answer is 10.
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 Largest shared factor of 16, 24 is 8. So the final answer is 8.
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  $20 \div 4 = 5$  exactly, so yes. So the final answer is Yes.
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  $5 \times 1, 2, 3 = 5, 10, 15$ . So the final answer is 5, 10, 15.
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 Equal pieces use the  $GCF$  of 12, 18 = 6. So the final answer is 6.
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 They meet at the  $LCM$  of 4, 6 = 12 minutes. So the final answer is 12.
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  $GCF$  of 9, 12 is 3. So the final answer is 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  $LCM$  of 3, 5 is 15. So the final answer is 15.



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