

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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