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 _____
2. GCF of 12 and 18 _____
3. GCF of 8 and 12 _____
4. LCM of 3 and 4 _____
5. LCM of 4 and 6 _____
6. GCF of 10 and 15 _____
7. LCM of 2 and 5 _____
8. GCF of 20 and 30 _____
9. LCM of 6 and 8 _____
10. GCF of 7 and 14 _____
11. LCM of 5 and 10 _____
12. GCF of 16 and 24 _____
13. Is 4 a factor of 20? _____
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. $\boxed{3}$	**7.** $\boxed{10}$	**13.** $\boxed{\text{Yes}}$
2. $\boxed{6}$	**8.** $\boxed{10}$	**14.** $\boxed{5, 10, 15}$
3. $\boxed{4}$	**9.** $\boxed{24}$	**15.** $\boxed{6}$
4. $\boxed{12}$	**10.** $\boxed{7}$	**16.** $\boxed{12}$
5. $\boxed{12}$	**11.** $\boxed{10}$	**17.** $\boxed{3}$
6. $\boxed{5}$	**12.** $\boxed{8}$	**18.** $\boxed{15}$

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: $3, 6, 9, 12 \ldots$ 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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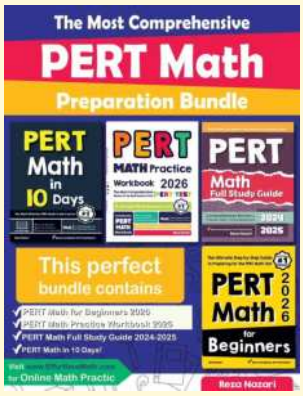

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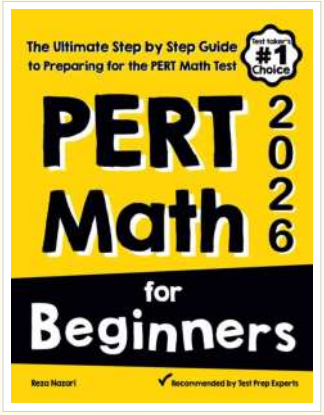

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