Greatest Common Factor and Least Common Multiple

Name: _____	Date: _____	Score: _____ / 24

Quick Review

The **greatest common factor (GCF)** of two numbers is the largest number that divides *both* of them evenly. The **least common multiple (LCM)** is the smallest number that *both* numbers divide into. To find the GCF, list the factors of each number and pick the biggest one they share. To find the LCM, list the multiples of each number and pick the smallest one they share. A handy memory trick: **GCF is small or equal**, **LCM is big or equal**.

◇ **Example:** Find the GCF of 24 and 36.

⇒ Let us list the factors of each number. The factors of 24 are $1, 2, 3, 4, 6, 8, 12, 24$. The factors of 36 are $1, 2, 3, 4, 6, 9, 12, 18, 36$. Now circle the ones that appear in *both* lists: $1, 2, 3, 4, 6,$ and 12. The greatest of those shared factors is 12, so the GCF is 12. Check: $24 \div 12 = 2$ and $36 \div 12 = 3$, both whole numbers.

Answer: 12

PRACTICE

Find the GCF or LCM as asked.

1. GCF of 8 and 12 _____
2. GCF of 12 and 30 _____
3. GCF of 18 and 24 _____
4. GCF of 14 and 35 _____
5. GCF of 16 and 40 _____
6. GCF of 27 and 36 _____
7. GCF of 20 and 50 _____
8. GCF of 24 and 36 _____
9. GCF of 28 and 42 _____
10. GCF of 32 and 48 _____
11. GCF of 45 and 60 _____
12. GCF of 36 and 54 _____
13. LCM of 3 and 5 _____
14. LCM of 4 and 6 _____
15. LCM of 6 and 9 _____
16. LCM of 4 and 10 _____
17. LCM of 8 and 12 _____
18. LCM of 6 and 8 _____
19. LCM of 5 and 8 _____
20. LCM of 12 and 18 _____

♦ Word Problems

21. A craft teacher has 24 red beads and 18 blue beads. She wants to make identical kits using all the beads. What is the greatest number of kits she can make? _____

22. One bus leaves every 8 minutes and another every 6 minutes. If they leave together now, in how many minutes will they next leave together? _____

23. A store has 36 granola bars and 48 juice boxes to split into identical snack packs with nothing left over. What is the greatest number of packs? _____

24. Hot dogs come in packs of 9 and buns in packs of 12. What is the least number of each item you can buy to have equal amounts? _____

Answer Keys

1. 4
2. 6
3. 6
4. 7
5. 8
6. 9
7. 10
8. 12
9. 14
10. 16
11. 15
12. 18
13. 15
14. 12
15. 18
16. 20
17. 24
18. 24
19. 40
20. 36
21. 6 kits
22. 24 minutes
23. 12 packs
24. 36 of each

Step-by-Step Explanations

1. Shared factors of 8 and 12 are $1, 2, 4$; the greatest is 4.
2. Both numbers are divisible by 6, and nothing larger divides both.
3. Shared factors are $1, 2, 3, 6$; the greatest is 6.
4. Both 14 and 35 are divisible by 7, the largest shared factor.
5. The largest number dividing both 16 and 40 is 8.
6. Both numbers are divisible by 9, and nothing larger works.
7. The largest number dividing both 20 and 50 is 10.
8. The greatest shared factor of 24 and 36 is 12.
9. Both 28 and 42 are divisible by 14, the largest shared factor.
10. The largest number dividing both 32 and 48 is 16.
11. Both numbers are divisible by 15, and nothing larger works.
12. The greatest shared factor of 36 and 54 is 18.
13. Multiples of 3: $3, 6, 9, 12, 15, \ldots$ Multiples of 5: $5, 10, 15, \ldots$ The first shared one is 15.
14. The smallest number that both 4 and 6 divide into is 12.
15. The smallest common multiple of 6 and 9 is 18.
16. 4 and 10 both divide into 20, the smallest such number.
17. The smallest number both 8 and 12 divide into is 24.
18. 6 and 8 both divide into 24, the least common multiple.
19. Since 5 and 8 share no factors, the LCM is $5 \times 8 = 40$.
20. The smallest number both 12 and 18 divide into is 36.
21. The greatest number of equal kits is the GCF of 24 and 18, which is 6. Each kit gets 4 red and 3 blue beads.
22. They meet again at the LCM of 8 and 6, which is 24 minutes.
23. The greatest number of equal packs is the GCF of 36 and 48, which is 12.
24. The least equal amount is the LCM of 9 and 12, which is 36 — that is 4 packs of hot dogs and 3 packs of buns.

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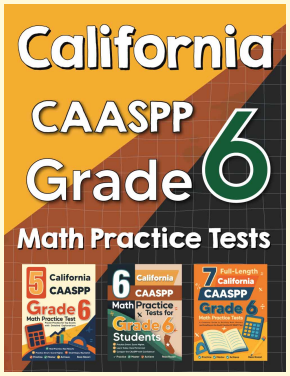

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