

Factors, Multiples and Common Ones: GCF and LCM

Grade 6 math · Worksheet Answer Key · Standards: 6.NS.B.4

Every solution below shows the full reasoning, including the factor lists or prime factorizations. Compare your method as well as your result, and notice how a quick check by division confirms each GCF and each LCM.

Standards: 6.NS.B.4 · **Level:** Grade 6

Problem 1 Listing factors

Pairs that multiply to 28: 1×28 , 2×14 , 4×7 . Factors: **1, 2, 4, 7, 14, 28**.

Problem 2 Smallest multiples

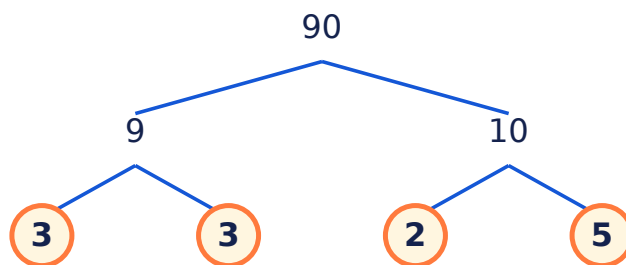
13×1 through 13×6 : **13, 26, 39, 52, 65, 78**.

Problem 3 Prime or composite

$51 = 3 \times 17$, composite. 53 is not divisible by 2, 3, 5 or 7, so it is prime. $57 = 3 \times 19$, composite. 61 is not divisible by 2, 3, 5 or 7, prime. **Prime: 53, 61. Composite: 51, 57.**

Problem 4 Finishing a factor tree

$9 = 3 \times 3$ and $10 = 2 \times 5$.



Finished tree: $90 = 2 \times 3 \times 3 \times 5$.

$90 = 2 \times 3 \times 3 \times 5$, or $2 \times 3^2 \times 5$.

Problem 5 GCF of 20 and 50

Factors of 20: 1, 2, 4, 5, 10, 20. Factors of 50: 1, 2, 5, 10, 25, 50. Common: 1, 2, 5, 10. **GCF = 10.**

Problem 6 GCF of 42 and 56

$42 = 2 \times 3 \times 7$ and $56 = 2 \times 2 \times 2 \times 7$. Shared primes: 2 and 7. $2 \times 7 = \mathbf{14}$. Check: $42 \div 14 =$

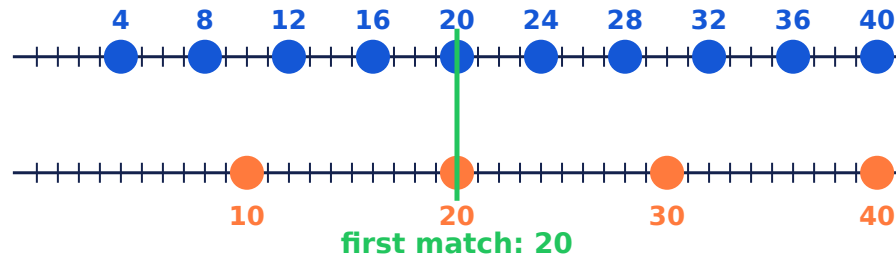
3 and $56 \div 14 = 4$.

Problem 7 LCM of 5 and 12

Multiples of 12: 12, 24, 36, 48, 60. Only 60 is also a multiple of 5 ($60 = 5 \times 12$). **LCM = 60.**

Problem 8 Multiples of 10 and 4

Multiples of 10: 10, 20, 30, 40. The first one that is also a multiple of 4 is 20 ($20 = 4 \times 5$).



Multiples of 4 and 10 first meet at 20.

LCM = 20.

Problem 9 GCF of 64 and 80

$64 = 2^6$ and $80 = 2^4 \times 5$. Shared: $2^4 = 16$. Check: $64 \div 16 = 4$, $80 \div 16 = 5$, and 4 and 5 share no factor. **GCF = 16.**

Problem 10 LCM of 9 and 12

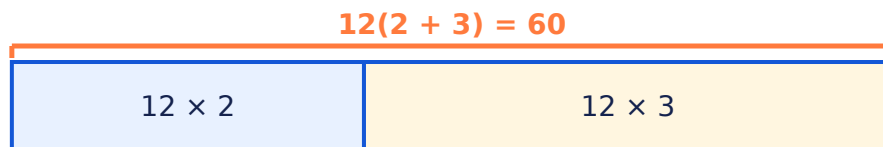
Multiples of 12: 12, 24, 36. $36 \div 9 = 4$, so 36 is a multiple of 9, while 12 and 24 are not. **LCM = 36.**

Problem 11 GCF of 45 and 100

$45 = 3 \times 3 \times 5$ and $100 = 2 \times 2 \times 5 \times 5$. The only shared prime is 5. **GCF = 5.**

Problem 12 Factoring $24 + 36$

$\text{GCF}(24, 36) = 12$. $24 = 12 \times 2$ and $36 = 12 \times 3$.



$$24 + 36 = 12(2 + 3).$$

$24 + 36 = 12(2 + 3)$. Check: $12 \times 5 = 60$.

Problem 13 Factoring $63 + 84$

$\text{GCF}(63, 84) = 21$, since $63 = 21 \times 3$ and $84 = 21 \times 4$. **$63 + 84 = 21(3 + 4)$.** Check: $21 \times 7 = 147 = 63 + 84$.

Problem 14 GCF of 84 and 126

$84 = 2 \times 2 \times 3 \times 7$ and $126 = 2 \times 3 \times 3 \times 7$. Shared primes: 2, 3 and 7. $2 \times 3 \times 7 = \mathbf{42}$.

Problem 15 Gift bags

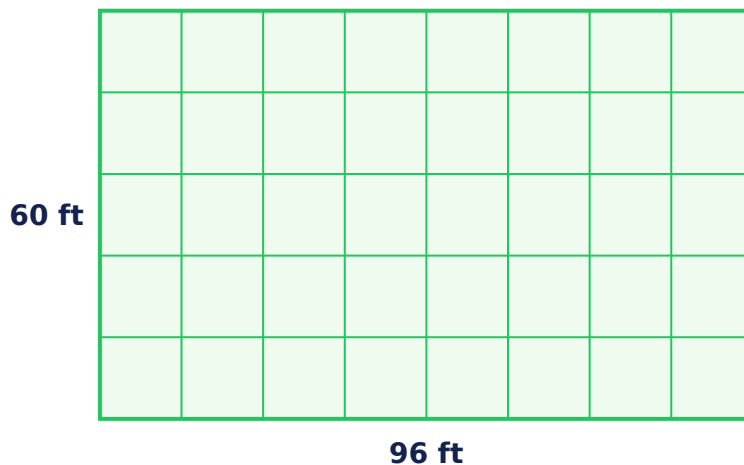
$\text{GCF}(56, 84) = 28$. $56 \div 28 = 2$ and $84 \div 28 = 3$. **28 bags, each with 2 granola bars and 3 juice boxes.**

Problem 16 Lighthouse flashes

$\text{LCM}(6, 8) = 24$, so they flash together every 24 seconds. 2 minutes = 120 seconds. Times: 24, 48, 72, 96, 120. **5 times.**

Problem 17 Square garden plots

$\text{GCF}(96, 60) = 12$, so the squares are 12 ft wide. Columns: $96 \div 12 = 8$. Rows: $60 \div 12 = 5$.



8 columns by 5 rows of 12-foot squares: 40 squares.

$8 \times 5 = 40$. **12 ft squares, 40 plots.**

Problem 18 Two bus routes

$\text{LCM}(10, 15) = 30$. Adding 30 minutes repeatedly: **7:30 AM, 8:00 AM, 8:30 AM and 9:00 AM.**

Problem 19 School supply packs

$\text{LCM}(8, 12) = 24$ items. Marker packs: $24 \div 8 = 3$. Note packs: $24 \div 12 = 2$. **24 of each, using 3 marker packs and 2 sticky-note packs.**

Problem 20 Missing number

For two numbers, $\text{GCF} \times \text{LCM} = \text{product}$. $12 \times 72 = 864$, and $864 \div 24 = 36$. Check: $\text{GCF}(24, 36) = 12$ and $\text{LCM}(24, 36) = 72$. **The other number is 36.**