

Number Properties: Primes, Factors & Multiples

Number & Quantity (N) · Subskill 1.1 · Form 2 · Tier 1 — Foundational

Directions: Solve each problem and choose the best answer. A calculator is permitted.

1. Which of the following is the prime factorization of 84?
 - A. $2^2 \cdot 3 \cdot 7$
 - B. $2^3 \cdot 3 \cdot 7$
 - C. $2^2 \cdot 3^2 \cdot 7$
 - D. $2^3 \cdot 3^2 \cdot 7$
2. What is the greatest common factor (GCF) of 18 and 24?
 - F. 2
 - G. 3
 - H. 6
 - J. 72
3. What is the least common multiple (LCM) of 6 and 8?
 - A. 2
 - B. 14
 - C. 24
 - D. 48
4. How many prime numbers are there between 40 and 50?
 - F. 2
 - G. 3
 - H. 4
 - J. 5
5. What is the smallest positive integer that is divisible by both 8 and 12?
 - A. 4
 - B. 8
 - C. 12
 - D. 24
6. How many positive factors does 24 have?
 - F. 6
 - G. 8
 - H. 12
 - J. 24
7. Which of the following is the prime factorization of 100?
 - A. $2^2 \cdot 5$
 - B. $2^2 \cdot 5^2$
 - C. $2^3 \cdot 5^2$
 - D. $2^2 \cdot 5^3$
8. What is the greatest common factor (GCF) of 36 and 48?
 - F. 3
 - G. 4
 - H. 6
 - J. 12
9. What is the least common multiple (LCM) of 9 and 12?
 - A. 3
 - B. 21
 - C. 36
 - D. 108
10. Which of the following numbers is prime?
 - F. 29
 - G. 33
 - H. 35
 - J. 39
11. What is the smallest positive integer that is divisible by both 5 and 15?
 - A. 5
 - B. 15
 - C. 20
 - D. 75
12. How many positive factors does 36 have?
 - F. 4
 - G. 6
 - H. 9
 - J. 18

SolutionsNumber Properties: Primes, Factors & Multiples · Number & Quantity (N) · Subskill 1.1 · Form 2 · Tier 1

- 1. A** Divide out primes: $84 = 2 \cdot 42 = 2 \cdot 2 \cdot 21 = 2^2 \cdot 3 \cdot 7$.
- 2. H** $18 = 2 \cdot 3^2$ and $24 = 2^3 \cdot 3$; shared factors give $2 \cdot 3 = 6$.
- 3. C** $6 = 2 \cdot 3$, $8 = 2^3$, so $\text{LCM} = 2^3 \cdot 3 = 24$.
- 4. G** Between 40 and 50 the primes are 41, 43, 47 — that is 3 primes.
- 5. D** $\text{LCM}(8, 12)$: $8 = 2^3$, $12 = 2^2 \cdot 3$, so $\text{LCM} = 2^3 \cdot 3 = 24$.
- 6. G** Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24 — that is 8 factors.
- 7. B** $100 = 2 \cdot 50 = 2 \cdot 2 \cdot 25 = 2^2 \cdot 5^2$.
- 8. J** $36 = 2^2 \cdot 3^2$ and $48 = 2^4 \cdot 3$; shared factors give $2^2 \cdot 3 = 12$.
- 9. C** $9 = 3^2$, $12 = 2^2 \cdot 3$, so $\text{LCM} = 2^2 \cdot 3^2 = 36$.
- 10. F** 29 has no factors but 1 and itself. ($33 = 3 \cdot 11$, $35 = 5 \cdot 7$, $39 = 3 \cdot 13$.)
- 11. B** 15 is itself a multiple of 5, so $\text{LCM}(5, 15) = 15$.
- 12. H** Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 — that is 9 factors.

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