

Lesson 6-13

Reinforce Understanding

Prime Factorization

I can write a number as a product of its prime factors using a factor tree.

Worked model

I want the prime factorization of 60. I start by splitting it: $60 = 6 \times 10$.

1. 6 is not prime, so I break it: $6 = 2 \times 3$. Both 2 and 3 are prime, so I stop those branches.
2. 10 is not prime, so I break it: $10 = 2 \times 5$. Both 2 and 5 are prime, so I stop.
3. Now every factor is prime: $60 = 2 \times 2 \times 3 \times 5$.
4. Using exponents, I write it as $2^2 \times 3 \times 5$. I check: $2 \times 2 \times 3 \times 5 = 60$. Correct.

Practice

Complete each exercise. Show the reasoning that supports your answer.

1. Sort each expression: is it a COMPLETE prime factorization, or does it still have composite factors?

Write the name of the correct group on each line.

Groups: Complete Prime Factorization NOT Complete (Has Composite Factors)

- _____ $2 \times 2 \times 3$ (for 12)
- _____ $2 \times 3 \times 5$ (for 30)
- _____ $2 \times 2 \times 2 \times 3$ (for 24)
- _____ 4×3 (for 12)
- _____ 6×5 (for 30)
- _____ 8×3 (for 24)

2. Which of the following is a prime number?

Circle the letter of the best answer. Show how you know.

- A. 9
- B. 15
- C. 17
- D. 21

Show your work

3. What is the prime factorization of 30?

Circle the letter of the best answer. Show how you know.

- A. $2 \times 3 \times 5$
- B. 2×15
- C. 3×10
- D. 5×6

Show your work
