Answers and talk notes

Prime Factorization

What your student is learning

Tonight we break a number down into the smaller numbers that multiply to make it. We keep splitting until every piece is a prime number.

Answers

Ask your student to explain before you look.

1. **B.** 13. 13 can only be divided by 1 and 13, so it is prime.
2. **C.** $2 \times 3 \times 3$. $18 = 2 \times 9$ and $9 = 3 \times 3$, so $18 = 2 \times 3 \times 3$.
3. **A.** 5. $2 \times 3 = 6$ and $30 \div 6 = 5$, so $30 = 2 \times 3 \times 5$.
4. **D.** $2^3 \times 5$. There are three 2s, so $2 \times 2 \times 2 = 2^3$, and the product is $2^3 \times 5$.
5. **B.** $2^2 \times 3^2$. $36 = 4 \times 9 = (2 \times 2) \times (3 \times 3) = 2^2 \times 3^2$.
6. **C.** 42. $2 \times 3 = 6$ and $6 \times 7 = 42$.

Talk about it

Are 6 and 10 prime numbers, or can they still split?

Home mission

Write 60 on paper. Ask your student to split it a different way than class, like 4×15. Does the tree still end in 2, 2, 3 and 5?

When they are stuck, ask

- Is this number prime, or can we still split it into two smaller numbers?
- What two numbers multiply together to make this one?
- Let's multiply our prime pieces back together. Do we get the start number?

Try not to say

- Just stop at 6×10; that is the answer.
- 4 is prime, so leave it.
- 1 counts as one of the prime factors.