



Prime Factorizations

Math Concepts: Multiplication, prime factorizations

Materials: None

Players: Whole class

Set up: Put your students in a circle.

Play: Start counting around the circle starting at 1. For each number, state the number, and then give its prime factorization. If the number is a unit or a prime, say that instead of the prime factorization. Make a habit of saying the primes in the factorization in increasing size – for example, saying that 12 is 2 squared x 3, and not 2 x 3 x 2 or 3 x 2 squared - this will keep them organized and easier to understand and fit together.

If done correctly, you should hear:

1 - unit
 2 - prime
 3 - prime
 4 - 2 squared
 5 - prime
 6 - 2 x 3
 7 - prime
 8 - 2 cubed
 9 - 3 squared

10 - 2 x 5
 11 - prime
 12 - 2 squared x 3
 13 - prime
 14 - 2 x 7
 15 - 3 x 5
 16 - 2 to the fourth
 17 - prime
 18 - 2 x 3 squared

19 - prime
 20 - 2 squared x 5
 21 - 3 x 7
 22 - 2 x 11
 23 - prime
 24 - 2 cubed x 3
 25 - 5 squared
 26 - 2 x 13
 27 - 3 cubed

Goal: See how high your group can get before it starts slowing down.

– DISCUSSION AND TIPS –

Understanding and being comfortable with prime factorizations is incredibly helpful. It provides insights into how numbers are put together multiplicatively. It is key to doing fraction work where being able to find common factors and common multiples is so important. Stating prime factorizations using powers also provides excellent practice with exponents.

When someone gets stuck, give them ideas for how to get unstuck. For example, point out that the number is even (so it's divisible by 2), or that it ends in 0 or 5 (so it's divisible by 5).