# Pre-Algebra
# Prime Factor Trees

## What is a Prime Factor Tree?

A **Prime Factor Tree** is a device that can be used to find the prime factors of a number. Even though each number has a unique set of prime factors, most numbers do not have a unique prime factor tree. The nice thing about a tree is that you can work with any factors of the number, and by the time you have finished, you have found its unique set of prime factors.

## To develop a prime factor tree:

- Write the number to be factored at the top of the tree.
- Beneath the number, write a pair of factors that multiply to get the number.
- Repeat the above step until all of the factors are prime.
- It is useful to identify the prime factors you develop in some manner, like circling them.
- Collect all of the prime factors to obtain the prime factorization of the number.

**Examples:**



One Prime Factor Tree for 120



Another Prime Factor Tree for 120
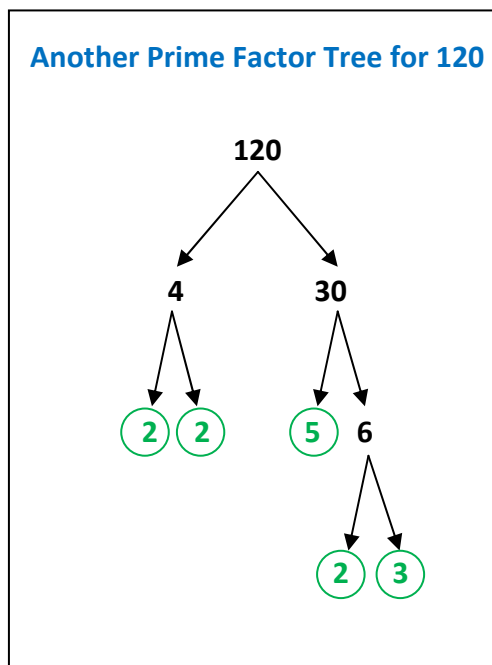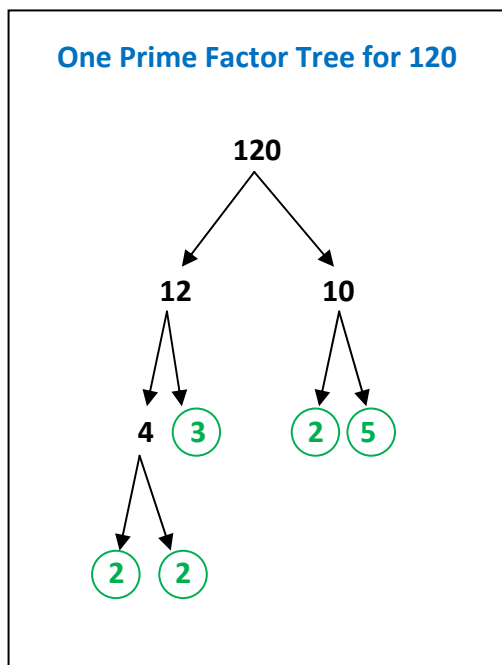
In both cases, the prime factorization of 120 is determined to be: $120 = 2^3 \cdot 3 \cdot 5$

Notice that the two trees in the examples obtain the same result even though they take different paths to get that result. Other paths are possible as well. The important thing is the result, not the path.