

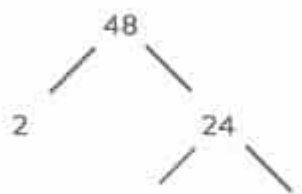
## Factoring Numbers on the ISEE All Levels

LESSON GOAL: Be able to factor any number on the ISEE within seconds.

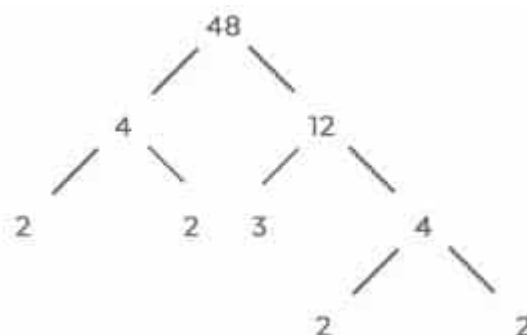
**ISEE Question:** How many different factors does 48 have?

**Solution:** We're going to solve this using the **factor tree method** (for a different way of doing it, see the "**Prime Factors and Prime Factorization on the ISEE**" lesson).

**STEP 1:**  
Write 48 in an empty margin and then "branch it" to two numbers that multiply to get 48.

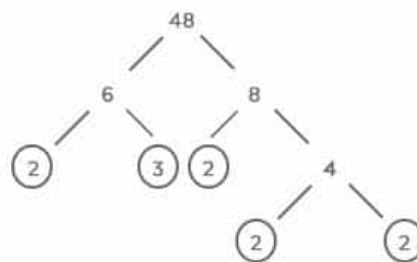
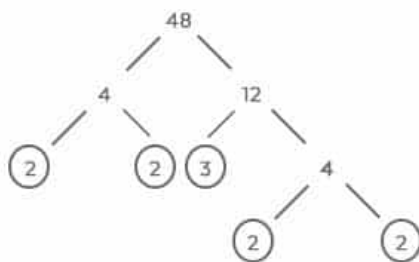
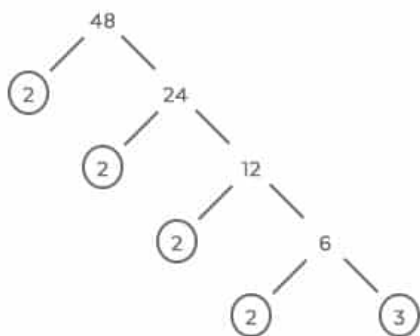


**STEP 2:**  
Repeat STEP 1 for any number that has smaller factors (don't bother dividing by 1).



**STEP 3:** Circle all the prime factors.

(**NOTE** that there are many possible factor trees, but you always get the same results because this is math!)



**STEP 4:** Find all possible products of the circled numbers ( , etc.). Finally, count all factors (don't forget to include 1 and the number itself!).

**Answer:** 48 has ten factors and they are 1, 2, 3, 4, 6, 8, 12, 16, 24, 48.

**Helpful Tip:** A neat way to double-check that you have all numbers is to multiply the first and last, second and second-to-last, third and third-to-last and so on until you reach the middle. All of these products should give the original number!

For other ISEE math concepts, visit