Learning as easy as 123

## Factoring Numbers on the ISEE <br> 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-tolast, third and third-to-last and so on until you reach the middle. All of these products should give the original number!

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