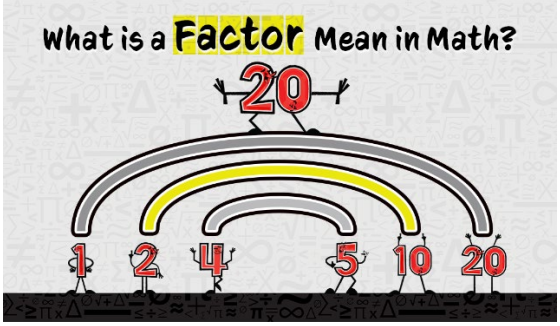

A factor is a number that divides another number evenly. In other words: The factors of a number all go into that number evenly. For example, take the number 12: the numbers that can divide it evenly (its factors) are 1, 2, 3, 4, 6, and 12.

Why?

Because if we divide 12 by 1, we get 12. No decimal points or fractions, just a nice, "clean" 12.

When we divide 12 by 2, we get 6. No remainders there either.

When we divide 12 by 3, we get 4.

And so on.

Every whole number has at least one factor because every number can be divided by 1. Every number greater than 1 has at least two factors because they can be divided by 1 and the number itself.

For example, the number 2 can be divided by 1, and the result is 2. It can also be divided by itself: 2 ÷ 2 = 1.

The number 3 can be divided by 1 and by itself, too, and so can numbers 4, 5, 6, and every other whole number.

<u>Let's look at more examples of factors:</u>

Just as division helps us understand (and find) factors in math, so can multiplication. It is the same process, but in reverse: instead of dividing numbers to find their factors, we can multiply numbers to see which number they create. The numbers we multiply are the factors of the number we create.

For example, we can multiply 2 by 3:

2 × 3 = 6

The numbers 2 and 3 are factors of 6.

What are the other factors of 6? Which other numbers can we multiply to create 6?

How about the number 1?

$1 \times 6 = 6$

Yes! The numbers 1 and 6 are also factors of 6.

But, how about the number 4 — can we multiply 4 by another whole number to create 6?

No, we cannot, so the number 4 is not a factor of 6.

Here are some more examples of how we can use multiplication to find factors of other numbers, in this case, the number 24:

MATHNASIUM
The Math Learning Center

Number	Factors	Explanation
6	1, 2, 3, 6	6÷1 = 6 6÷2 = 3 6÷3 = 2 6÷6 = 1
8	1, 2, 4, 8	8÷1 = 8 8÷2 = 4 8÷4 = 2 8÷8 = 1
10	1, 2, 5, 10	10÷1 = 10 10÷2 = 5 10÷5 = 2 10÷10 = 1
15	1, 3, 5, 15	15÷1 = 15 15÷3 = 5 15÷5 = 3 15÷15 = 1

Just as division helps us understand (and find) factors in math, so can multiplication. It is the same process, but in reverse: instead of dividing numbers to find their factors, we can multiply numbers to see which number they create. The numbers we multiply are the factors of the number we create.
For example, we can multiply 2 by 3:
$2 \times 3 = 6$
The numbers 2 and 3 are factors of 6.

What are the other factors of 6? Which other numbers can we multiply to create 6?
How about the number 1?
1 × 6 = 6
Yes! The numbers 1 and 6 are also factors of 6.
But, how about the number 4 — can we multiply 4 by another whole number to create 6?
No, we cannot, so the number 4 is not a factor of 6.
Here are some more examples of how we can use multiplication to find factors of other numbers, in this case, the number 24:

MATHNASIUM
The Math Learning Center

Multiplication	Factors of 24
1 x 24 = 24	1, 24
2 x 12 = 24	2, 12
3 x 8 = 24	3, 8
4 x 6 = 24	4, 6

Factor Pairs

Factor pairs are simply two numbers that you can multiply together to get a specific number.

For instance, if we take the number 8, its factor pairs are 1 and 8, and 2 and 4, because 1 × 8 = 8 and 2 × 4 = 8.

MATHNASIUM
The Math Learning Center

Number	Factors Pairs
1	1 x 1
2	1 x 2
3	1 x 3
4	1 x 4 and 2 x 2
5	1 x 5
6	1 x 6 and 2 x 3
7	1 x 7
8	1 x 8 and 2 x 4
9	1 x 9 and 3 x 3
10	1 x 10 and 2 x 5