The Meaning of Factors

Unit 1 Lesson 3

What is a factor?

Factors are numbers multiplied by each other in order to get a product. In the equal groups strategy, these numbers tell us **the size of a group** and **the number of groups there are** in a multiplication situation. Likewise, in an array model, these numbers tell us **how many rows and columns** there are in an array.

That means that **factors are the multiplicand and the multiplier in a multiplication equation**.

We can read a multiplication equation **A x B = C** as

A being the multiplicand, B being the multiplier, and C being the product.

A and B are called the factors of C.

What is a factor?

For example,

$$3 \times 4 = 12$$

3 can be identified as the multiplicand.
4 can be identified as the multiplier.
12 can be identified as the product.

However, 3 and 4 are not the only factors of 12.

What is a factor?

To find all factors of 12, we can simply identify what pairs of numbers have a product of 12.

What is a factor?

Start with 1. What do you multiply with 1 to get 12?

1 x 12 = 12. Therefore, our first pair is 1 and 12

What is a factor?

Next is **2**. What do you multiply with **2** to get 12?

2 x **6** = 12. Therefore, our second pair is **2** and **6**

What is a factor?

Next is **3**. What do you multiply with **3** to get 12? **3** x **4** = 12. Therefore, our third pair is **3** and **4**

What is a factor?

You will know when to stop once you encounter a repeat of pairs like:

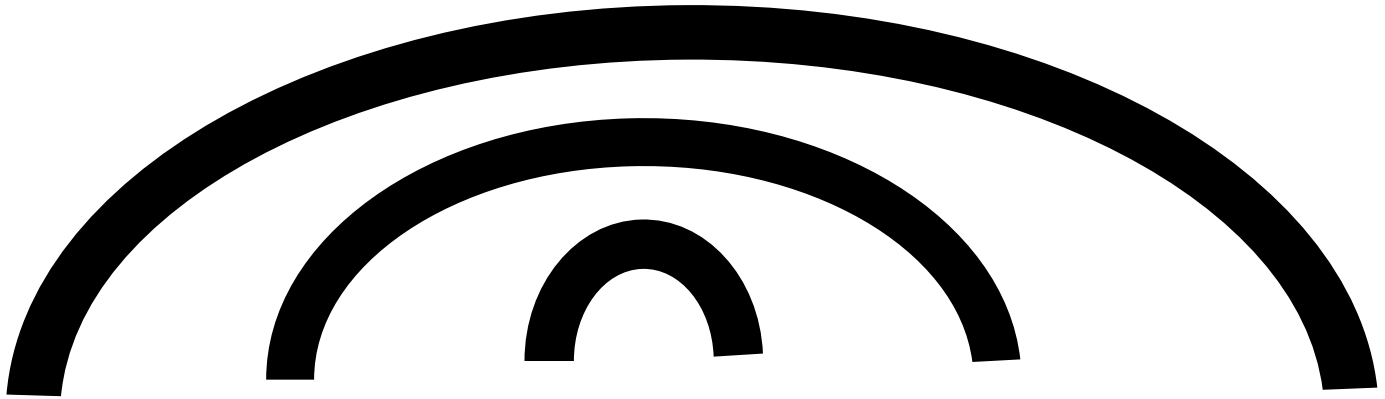
What is a factor?

Next is 4. What do you multiply with 4 to get 12?

4 x 3 = 12. Therefore, our third pair repeated which is 4 and 3

What is a factor?

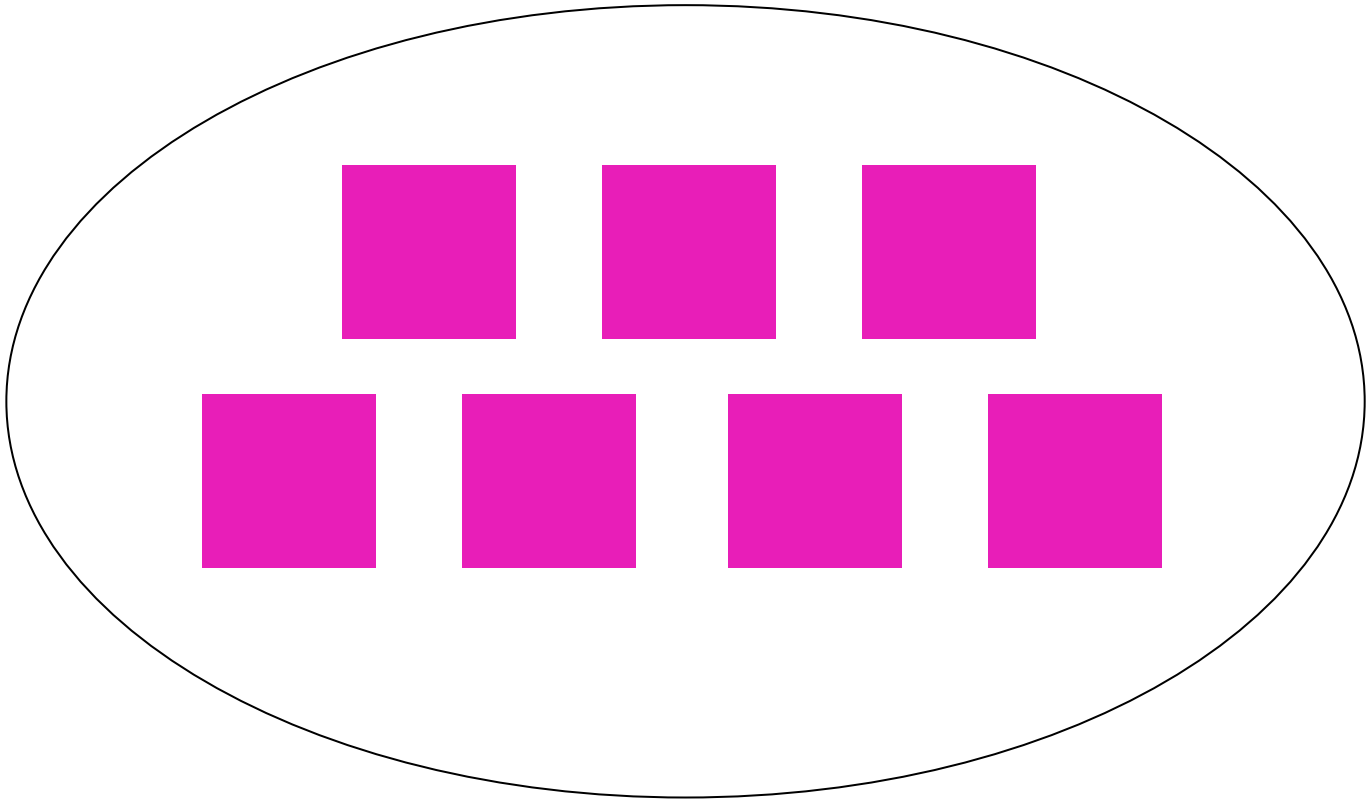
Once you got all the factors, list them all together.



1, 2, 3, 4, 6, 12

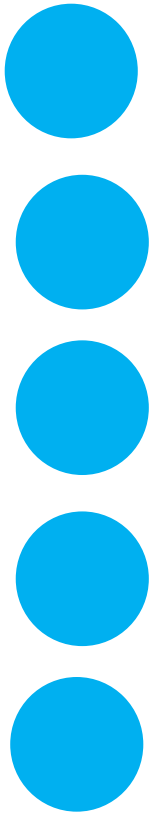
12 has 6 factors.

There is 1 group of 7 squares.



1 x 7 = 7

The array is made up of 5 rows and 1 column.



5 x 1 = 5

¿? Time to Think ¿?

1. **What do you notice about the number 1?**

1 is always the first factor of any number.

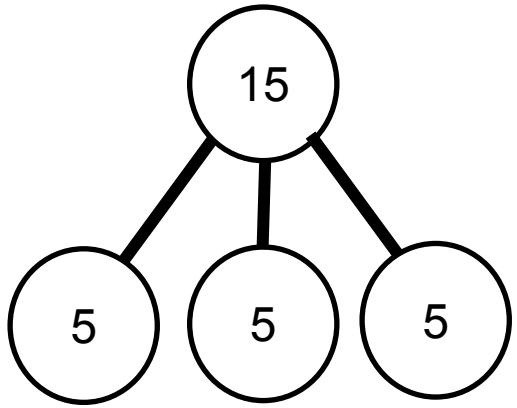
2. **Can the product itself be considered as its own factor? How?**

Yes. It is its own factor because it is paired with 1.

The following models are called number bonds.

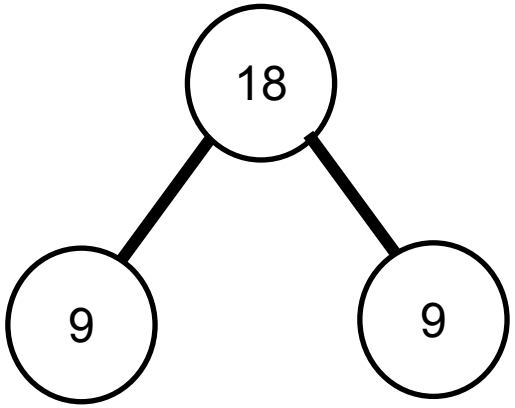
Number bonds are models that illustrate a part-part-whole relationship of numbers.

The following models are called number bonds.



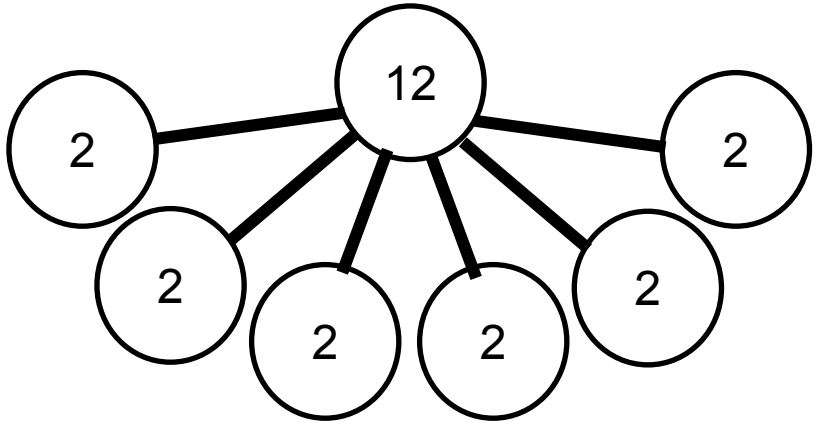
There are 3 groups of 5.
15 is called the product
3 and 5 are the factors.
3 x 5 = 15

The following models are called number bonds.



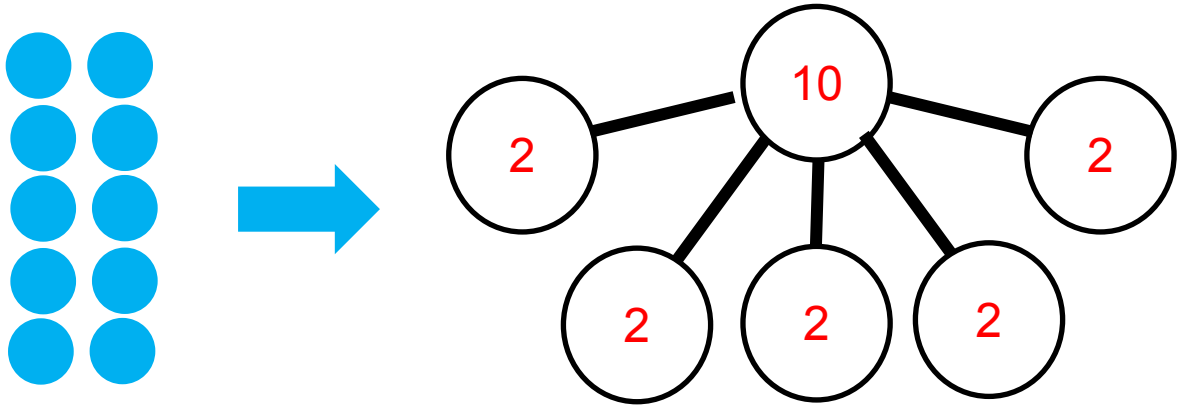
There are 2 groups of 9.
18 is called the product
2 and 9 are the factors.
2 x 9 = 18

The following models are called number bonds.



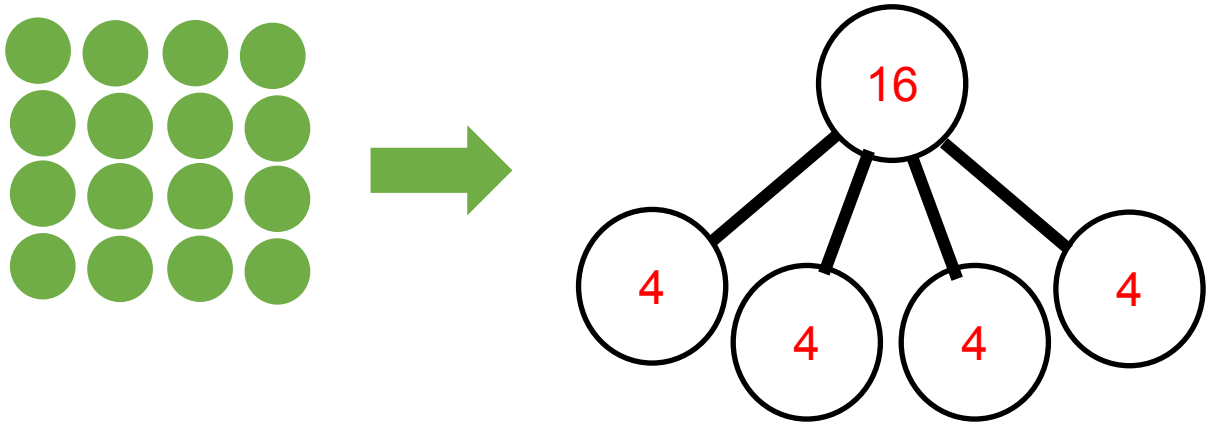
There are 6 groups of 2.
12 is called the product
6 and 2 are the factors.
6 x 2 = 12

We can also use number bonds to represent factors of an array model



There are 5 rows of 2
10 is the product.
5 and 2 are the factors.
5 x 2 = 10

We can also use number bonds to represent factors of an array model



There are 4 rows of 4
16 is the product.
4 and 4 are the factors.
4 x 4 = 16

¿? Time to Think ¿?

1. **What do you notice about the relationship between an array model and the equal groups strategy?**

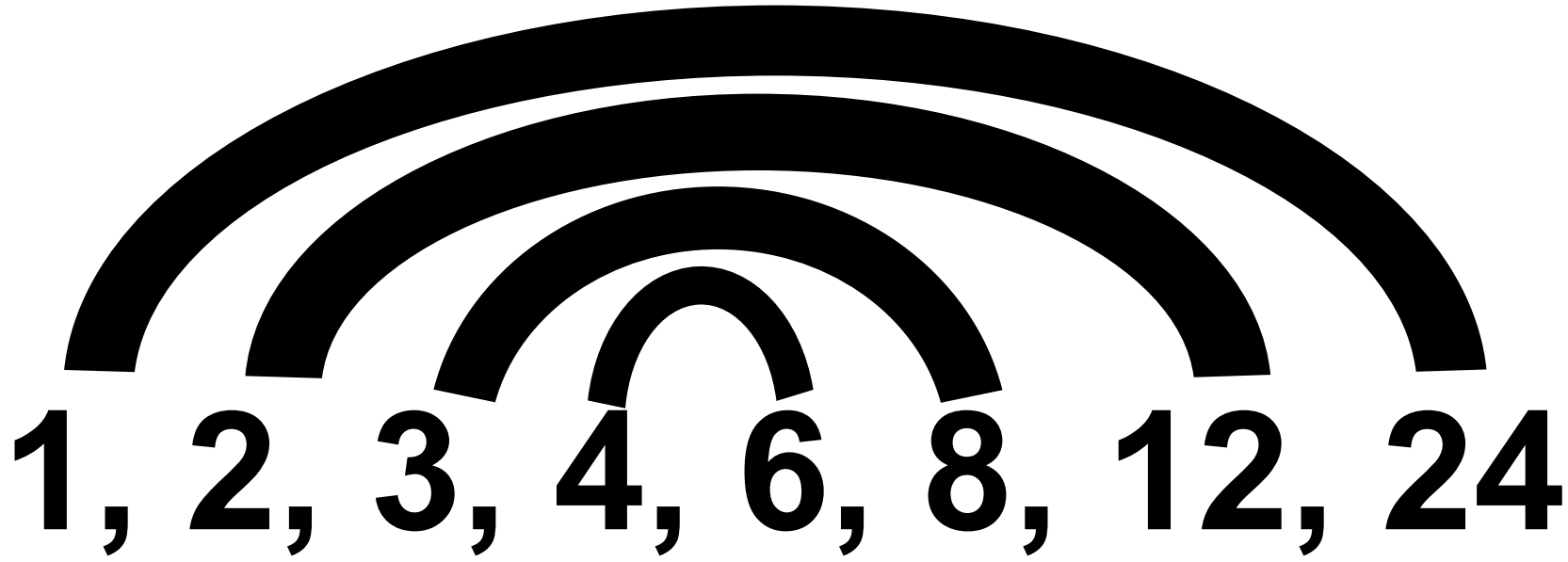
The number of rows is the same as the number of groups that determine a multiplication equation.

2. How is a number bond related to the equal groups strategy?

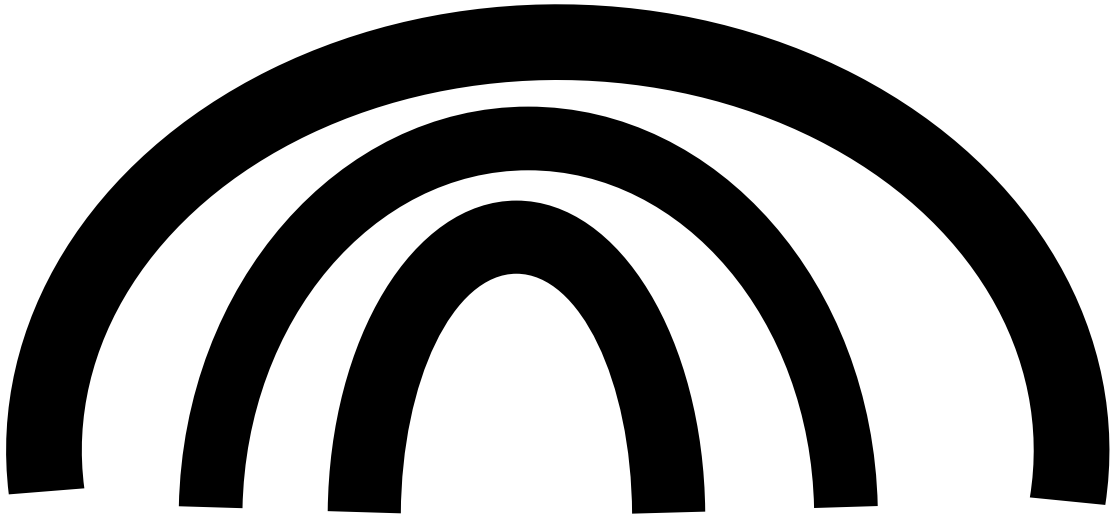
A number bond also shows groups of numbers. Each group has the same value inside.

List the factors of 8.

List the factors of 24.



List the factors of 18.



1, 2, 3, 6, 9, 18

List the factors of:

25: 1, 5, 25

32: 1, 2, 4, 8, 16, 32

28: 1, 2, 4, 7, 14, 28