Multiplication Using Array Model

Unit 1 Lesson 2

What is an array?

Using an array model is one way to multiply factors visually. Factors are what we call the numbers that we multiply. Multiplying using an array model means drawing a particular number of same-sized objects into **rows and columns**.

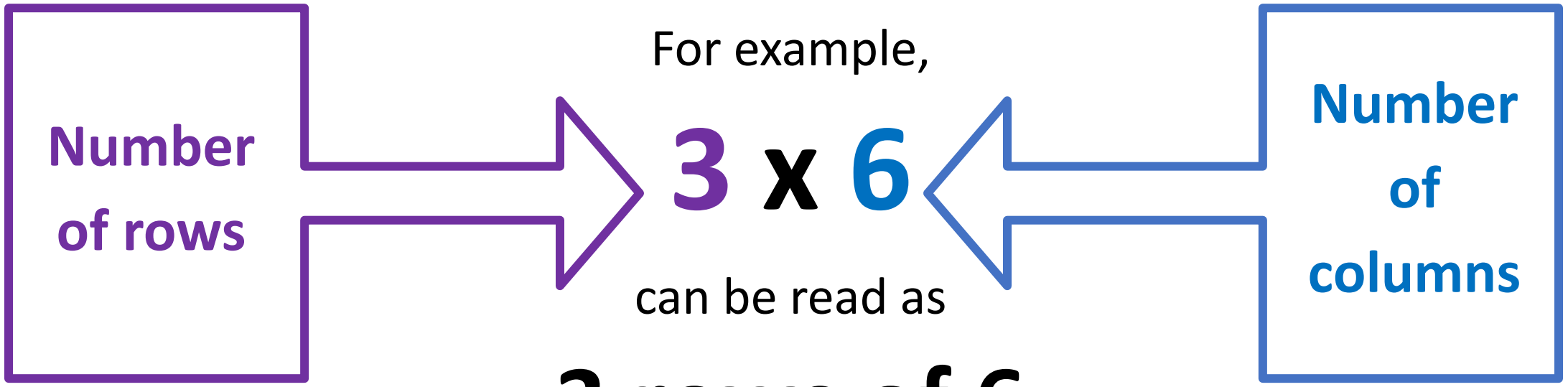
We can read a multiplication equation **A x B** as

A rows having B columns.

The factors are the numbers that determine **how many rows of particular columns there will be**.

That means that **each row always has the same amount of items in it**.

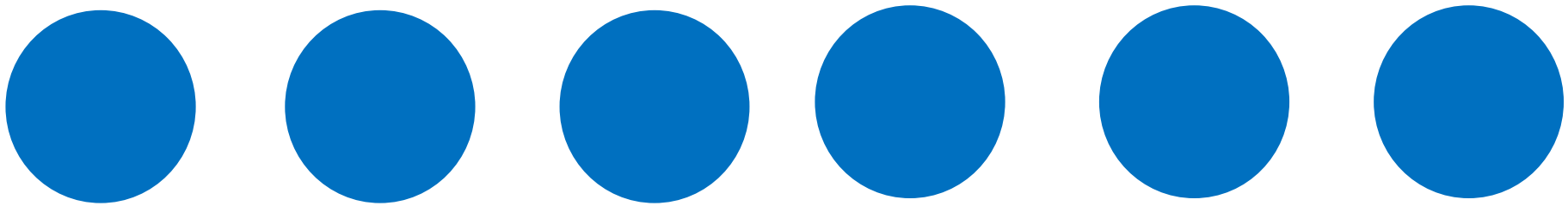
What is an array?



What is an array?

3 x 6

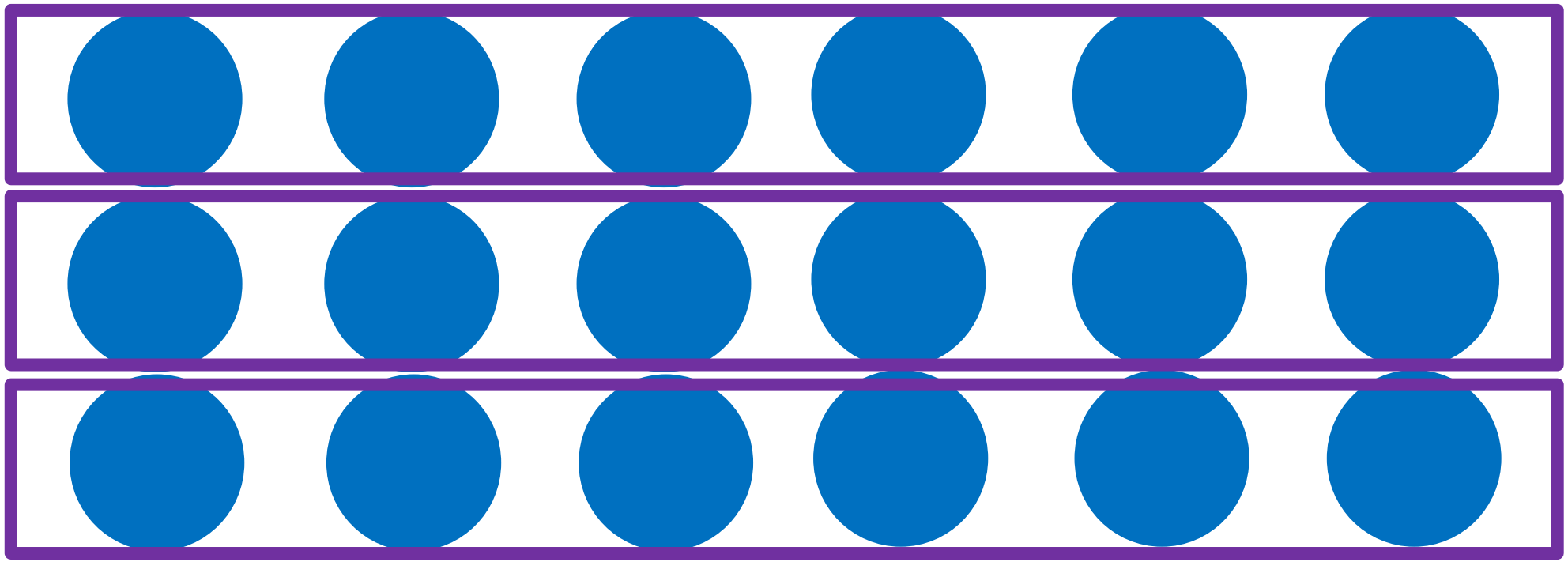
First, draw 6 same-size shapes in one horizontal line:



What is an array?

3 x 6

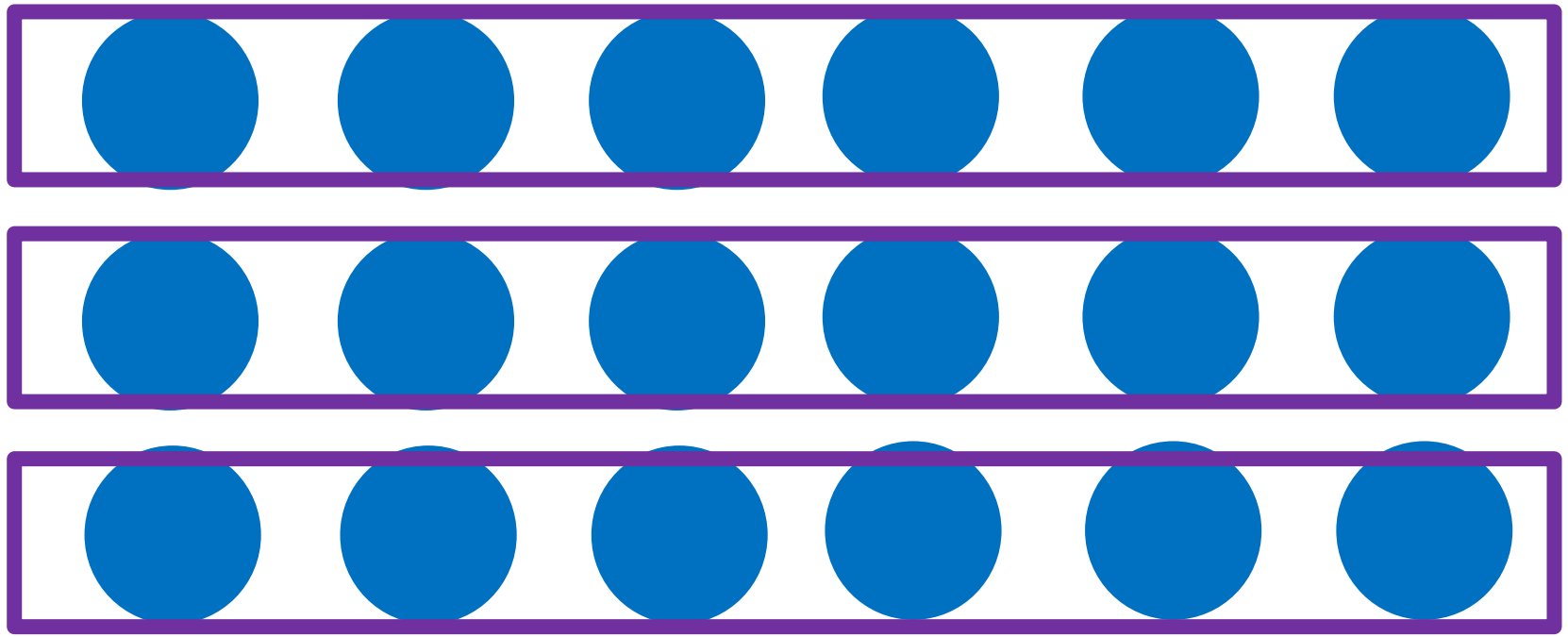
Then, draw horizontal line with the same amount of circles until you reach the desired number of rows:



What is an array?

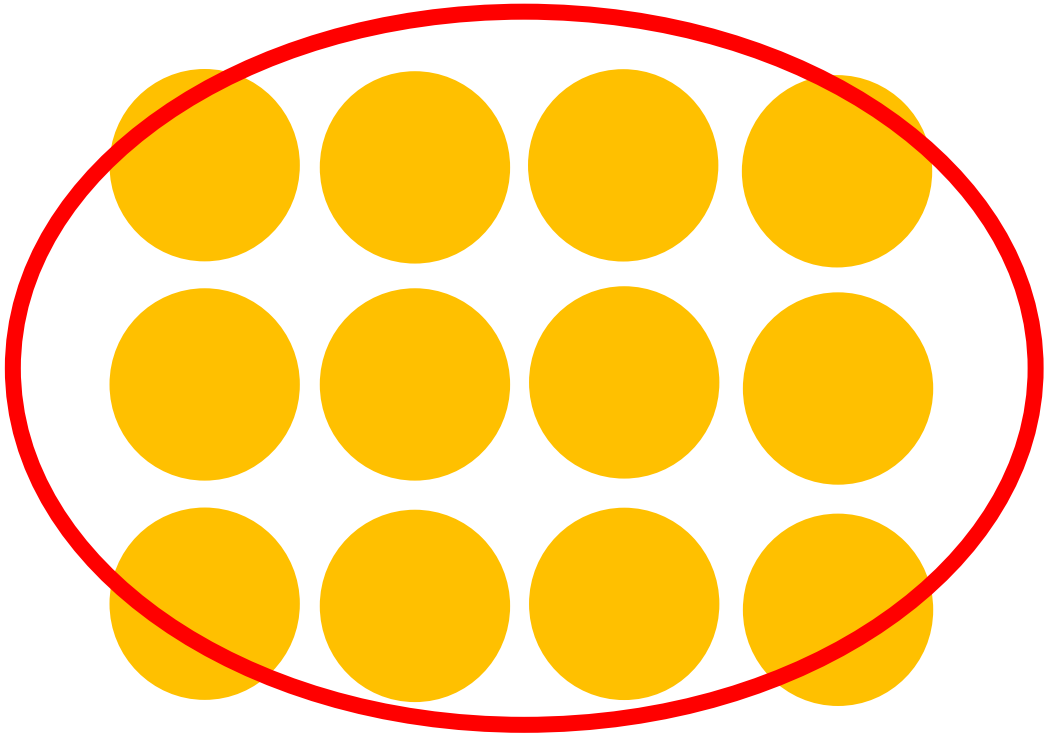
3 x 6

Count all the dots created in the 3 by 6 array model:



ANSWER: 18

Which is the array model?



How many rows and columns?

3 rows and 4 columns

¿? Time to Think ¿?

1. What does an array model look like? How does it help in multiplication?

An array model has objects aligned in rows and columns. This helps in multiplication in visual grouping by getting a product from the organized structure of rows and columns.

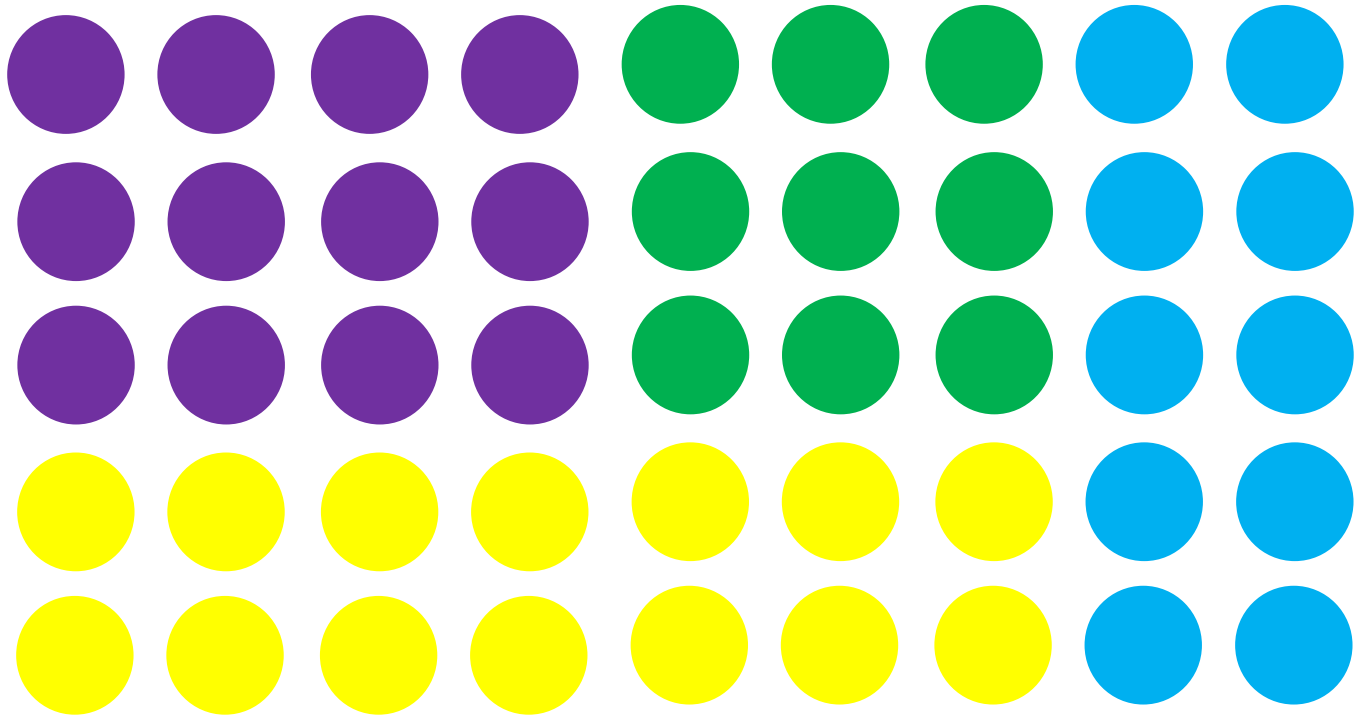
2. Why can't scattered items be classified as arrays?

Scattered items are not aligned into rows and columns.

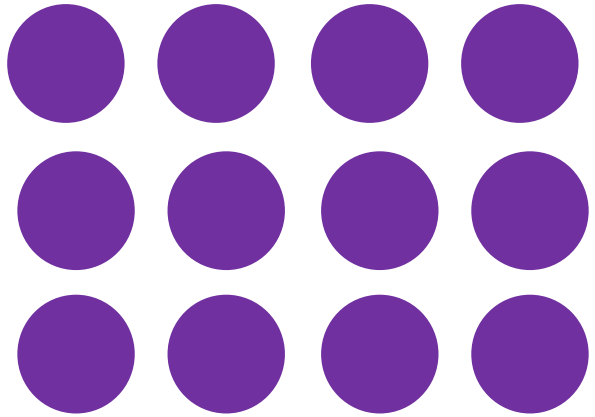
3. Is a table an array?

Yes because it has rows and columns.

An array can actually be composed of more than one array.



An array can actually be composed of more than one array.

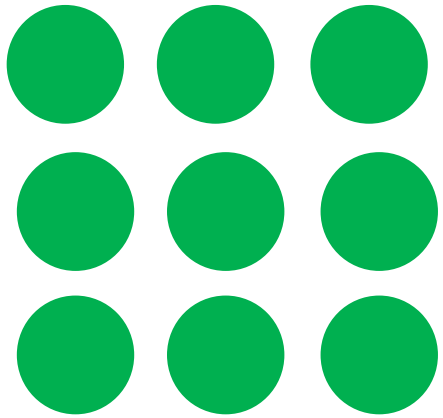


The purple array is composed of 3 rows and 4 columns.

Its expression can be written as 3 x 4

An array can actually be composed of more than one array.

The green array is composed of 3 rows and 3 columns. Its expression can be written as 3 x 3



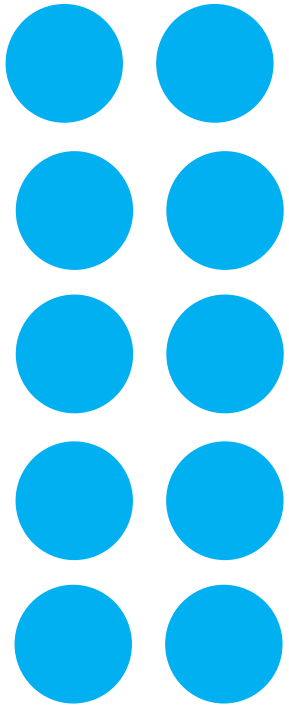
An array can actually be composed of more than one array.

The green array is composed of 2 rows and 7 columns.

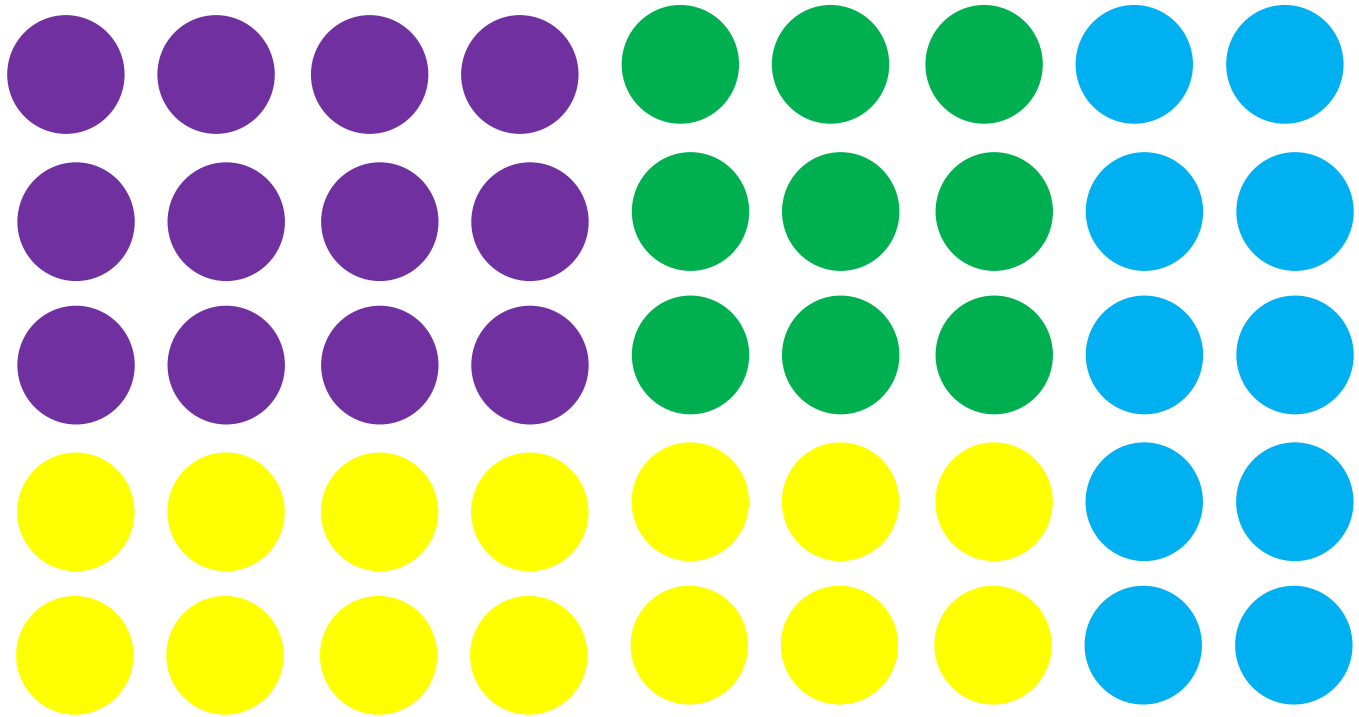
Its expression can be written as 2 x 7

An array can actually be composed of more than one array.

The blue array is composed of 5 rows and 2 columns. Its expression can be written as 5 x 2



An array can actually be composed of more than one array.



The whole array is composed of 5 rows and 9 columns.

Its expression can be written as 5 x 9

¿? Time to Think ¿?

1. What is the sum of the products of the purple, yellow, blue, and green arrays?

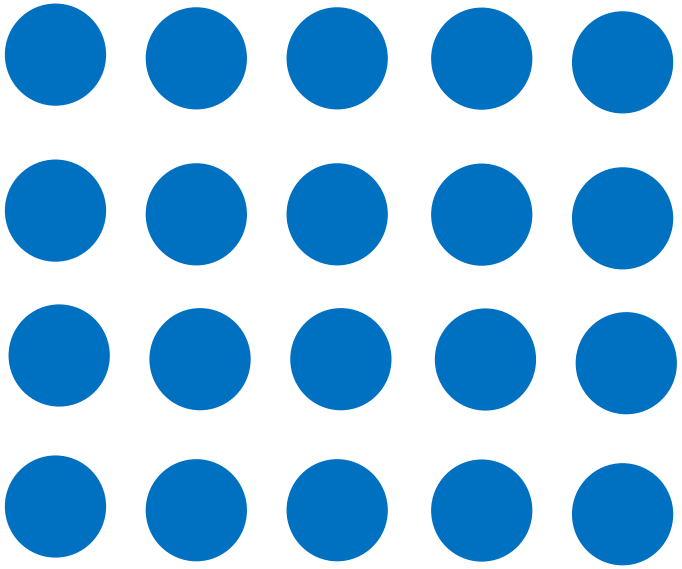
Purple: 12, Yellow: 14, Blue: 10, Green: 9

12 + 14 + 10 + 9 = 45

2. How is this related to the product of the entire array?

The sum of all the products of the small arrays is the same as the product of 5 x 9 = 45. This means that an array can be solved into smaller arrays to get the whole product.

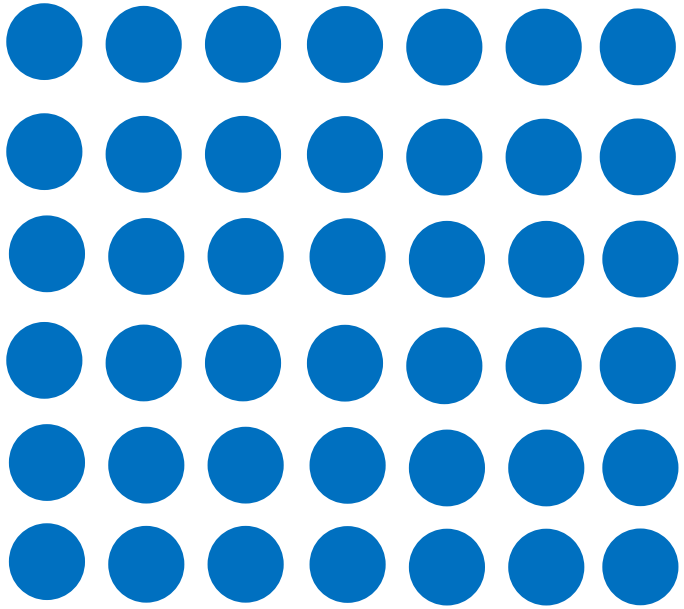
Draw an array for the expression 4 x 5



There are 4 rows and 5 columns.

The product is 20.

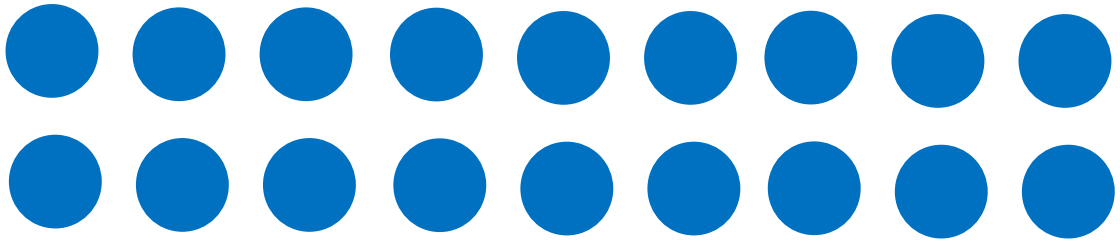
Draw an array for the expression 6 x 7



There are 6 rows and 7 columns.

The product is 42.

Draw an array for the expression 2 x 9



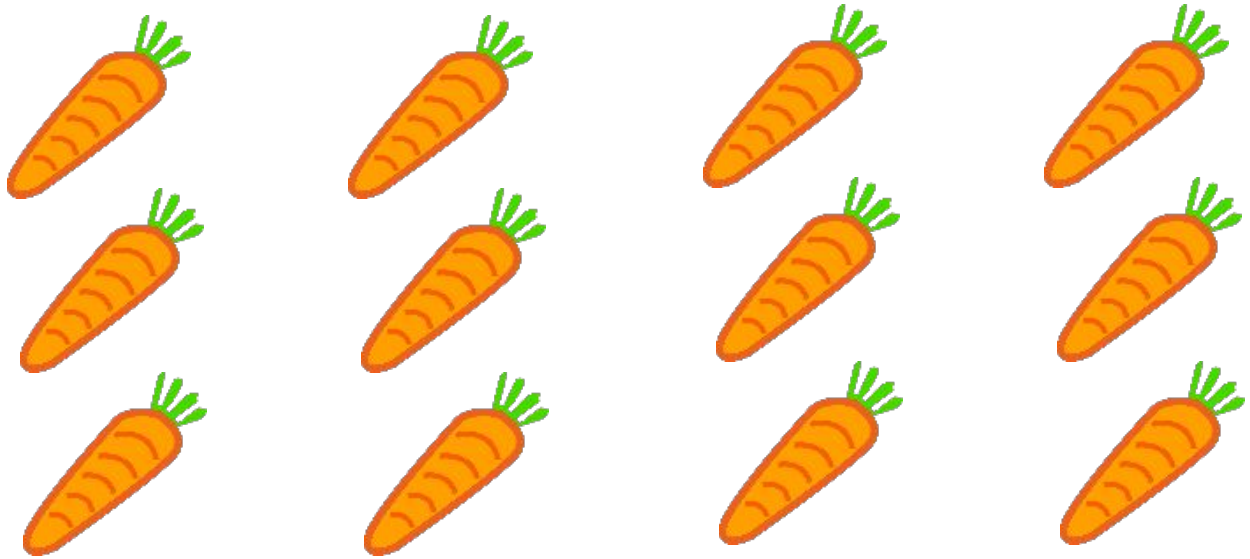
There are 2 rows and 9 columns.

The product is 18.

Students aligned themselves into 5 horizontal lines and 7 vertical lines. How many students are in the array?

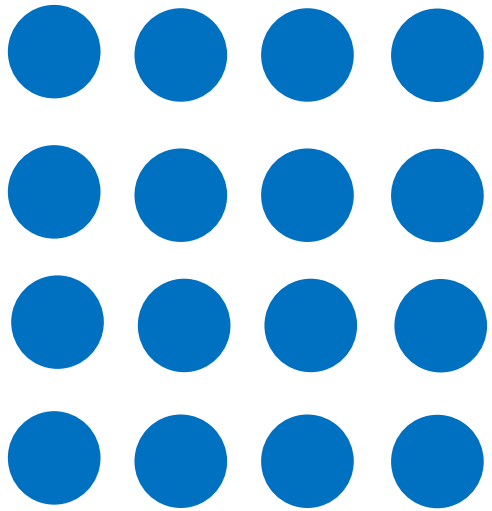
There are 35 students.

Johann has 3 rows of 4 carrots in his container. How many carrots are there altogether?



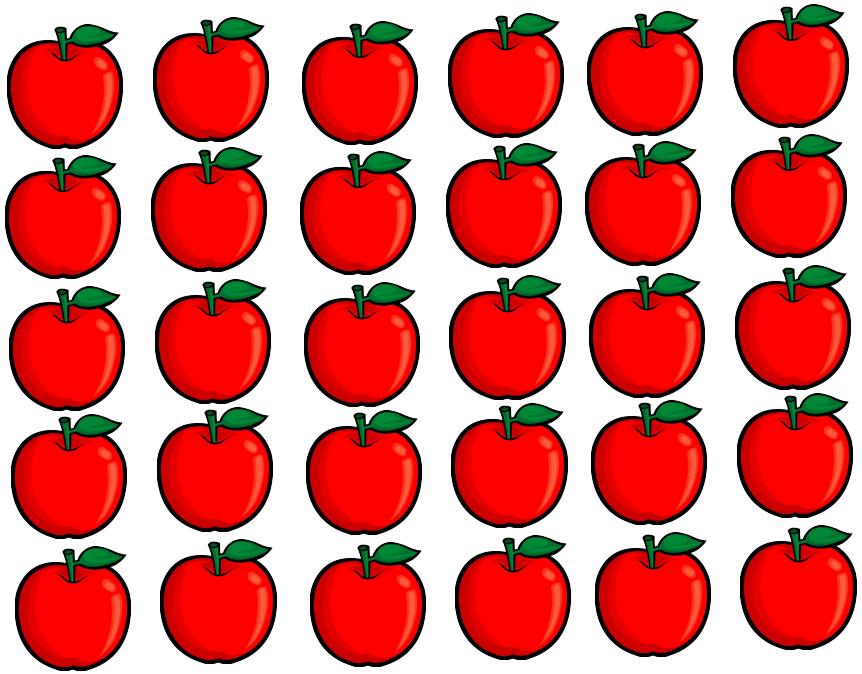
There are 12 carrots.

Ryan saw 4 spots aligned into 4 columns. How many spots are there?



4 rows of 4 mean 4 x 4. The product is **16 spots**

Patricia wants to put 6 apples each in 5 rows. How many apples does she have?



5 rows of 6 mean 5 x 6. The product is **30 apples**