

UNDERSTANDING

MULTIPLICATION AND DIVISION

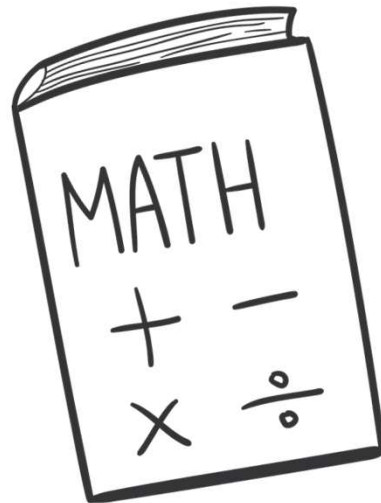
UNDERSTANDING ARRAYS

LESSON 3

TODAY'S OBJECTIVE

Today we will explore multiplication using arrays.

TAKE OUT YOUR **MATH JOURNALS**





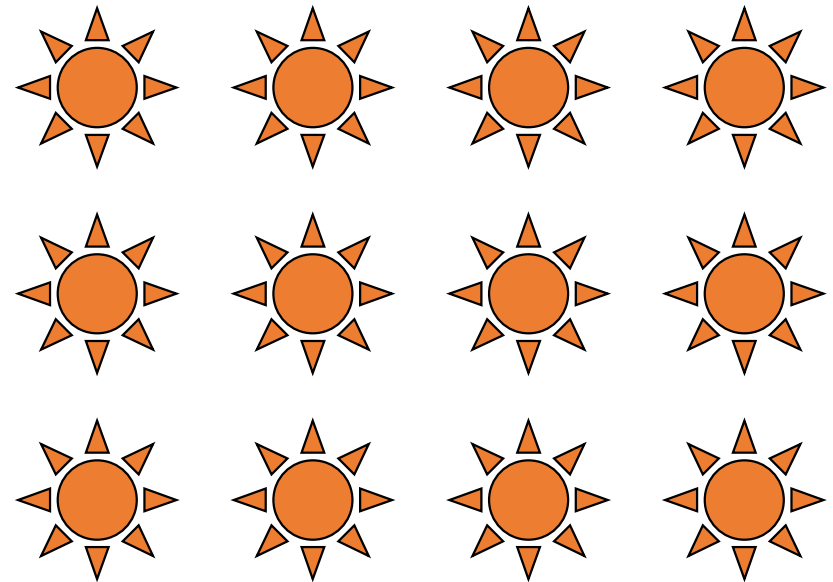
WATCH ME FIRST



Today we are going explore multiplication concepts using arrays.

BUT FIRST...LET'S EXPLORE ARRAYS

Array models help us represent multiplication and division.

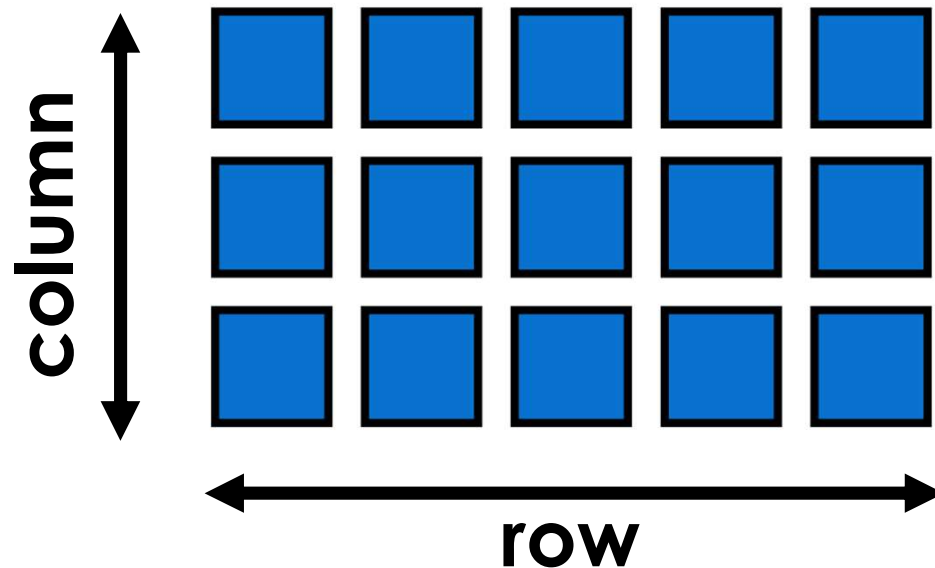




Did You Know?

An array is a group of objects arranged in equal rows and equal columns.

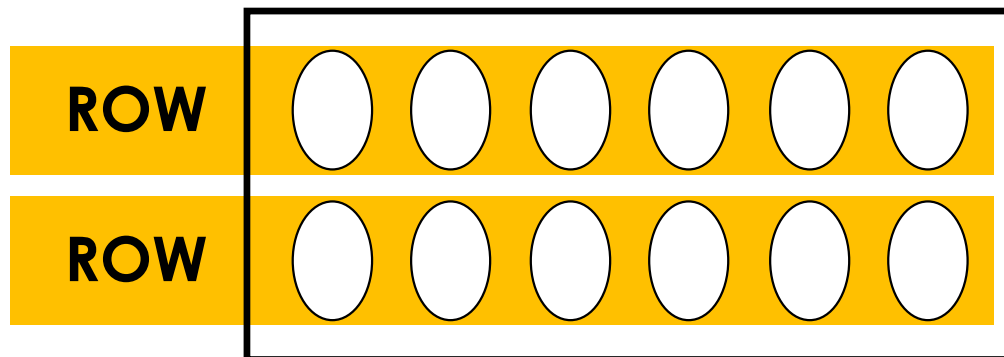
The rows and columns show the # of equal groups and the # of objects in each group.



There are 3 rows and there are 5 columns.

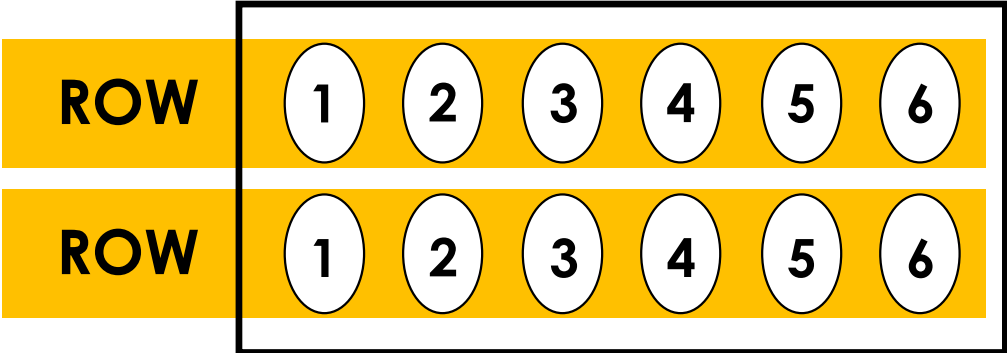


I'll use a carton of eggs to show how we can see arrays. First, let's look at the rows.



There are 2 equal rows. Each row is a group.

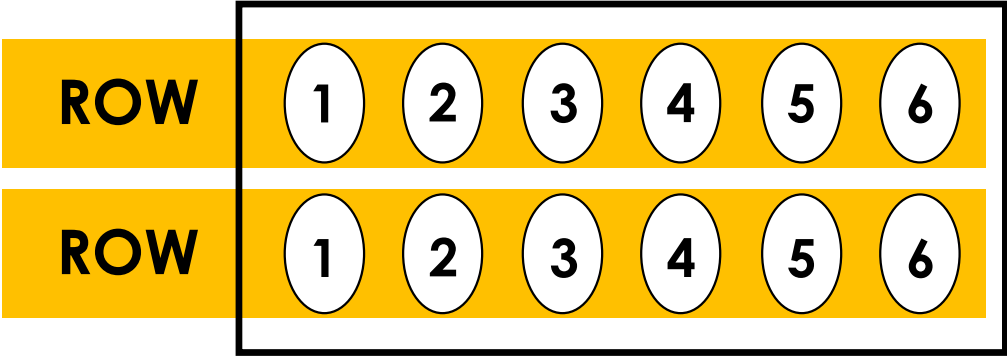
Each row has 6 eggs.
I can represent this with a multiplication equation.



_____ × _____ = _____

 WATCH ME FIRST

I'll start by recording the number of rows or groups in the array.

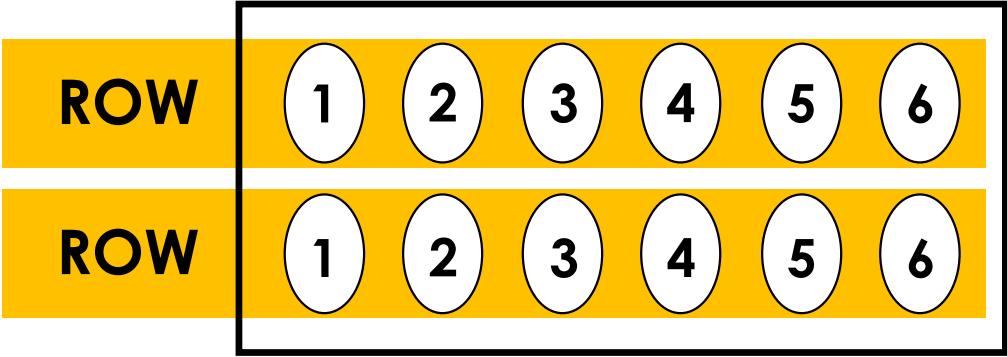


$$\begin{array}{c} \mathbf{2} \\ \hline \end{array} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

(# of groups)

 WATCH ME FIRST

Next, I'll record the number of objects in each group. In this case, it is the number of eggs in each row.

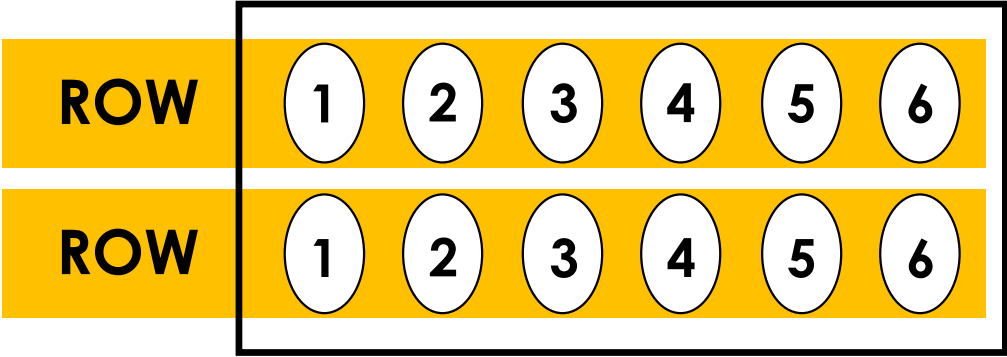


$$\begin{array}{c} \underline{\quad} \\ 2 \\ \underline{\quad} \end{array} \times \begin{array}{c} \underline{\quad} \\ 6 \\ \underline{\quad} \end{array} = \underline{\quad}$$

(# of groups) (# of objects in each group)

 WATCH ME FIRST

Finally, I'll record how many objects there are in total or the product.

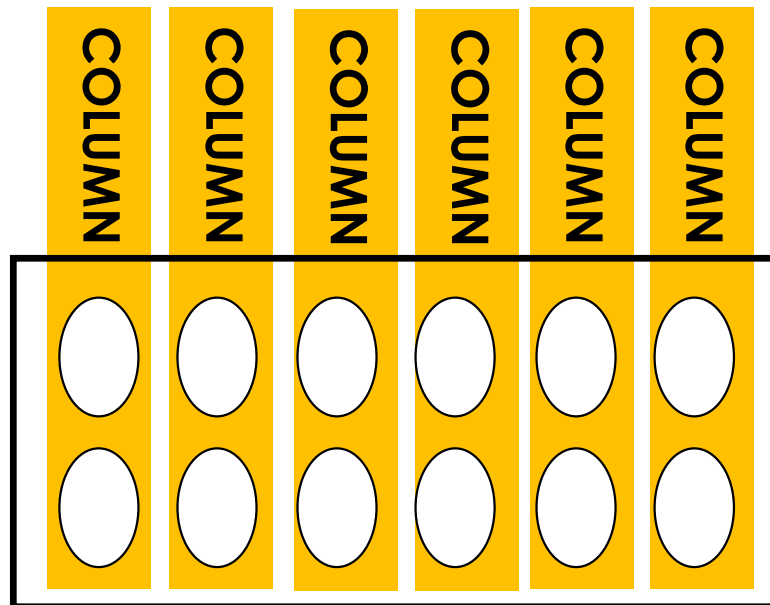


I can read the equation as:
2 groups of 6
is the same as 12

$$\begin{array}{ccccccc} \underline{2} & \times & \underline{6} & = & \underline{12} \\ \text{(# of groups)} & & \text{(# of objects in each group)} & & \text{(Total Number of Objects)} \end{array}$$



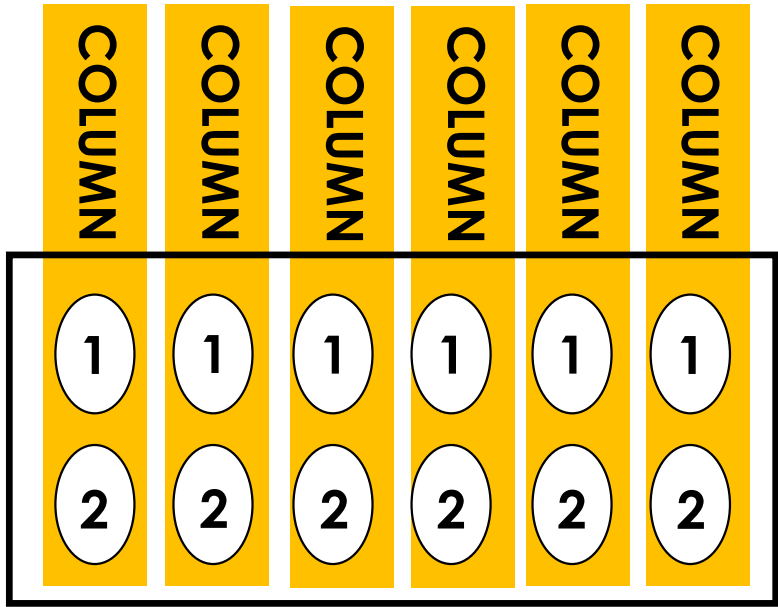
I can also see this array in another way.
This time let's focus on the columns.



There are 6 equal columns. Each column is a group.

 WATCH ME FIRST

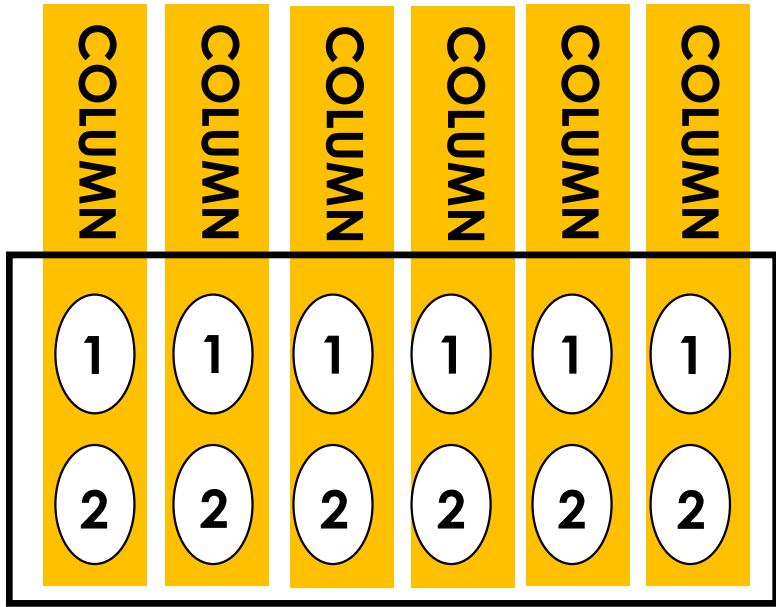
Each column has 2 eggs.
I can represent this with a multiplication equation.



_____ × _____ = _____

 WATCH ME FIRST

I'll start by recording the number of columns or groups in the array.

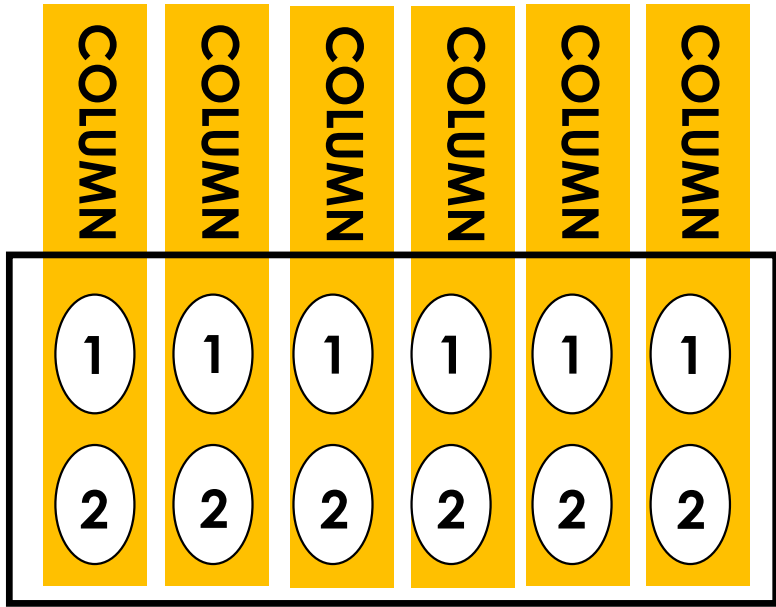


$$\underline{\quad 6 \quad} \times \underline{\quad \quad} = \underline{\quad \quad}$$

(# of groups)

 WATCH ME FIRST

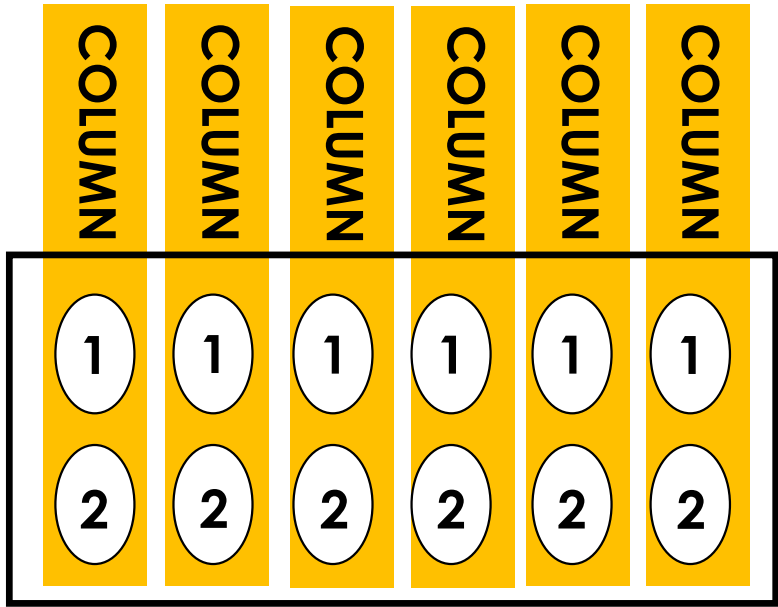
Next, I'll record the number of objects in each group. In this case, the number of eggs in each column.



$$\begin{array}{c} \underline{\quad 6 \quad} \\ \text{(# of groups)} \end{array} \times \begin{array}{c} \underline{\quad 2 \quad} \\ \text{(# of objects in each group)} \end{array} = \underline{\quad \quad}$$

 WATCH ME FIRST

Finally, I'll record how many objects there are in total or the product.



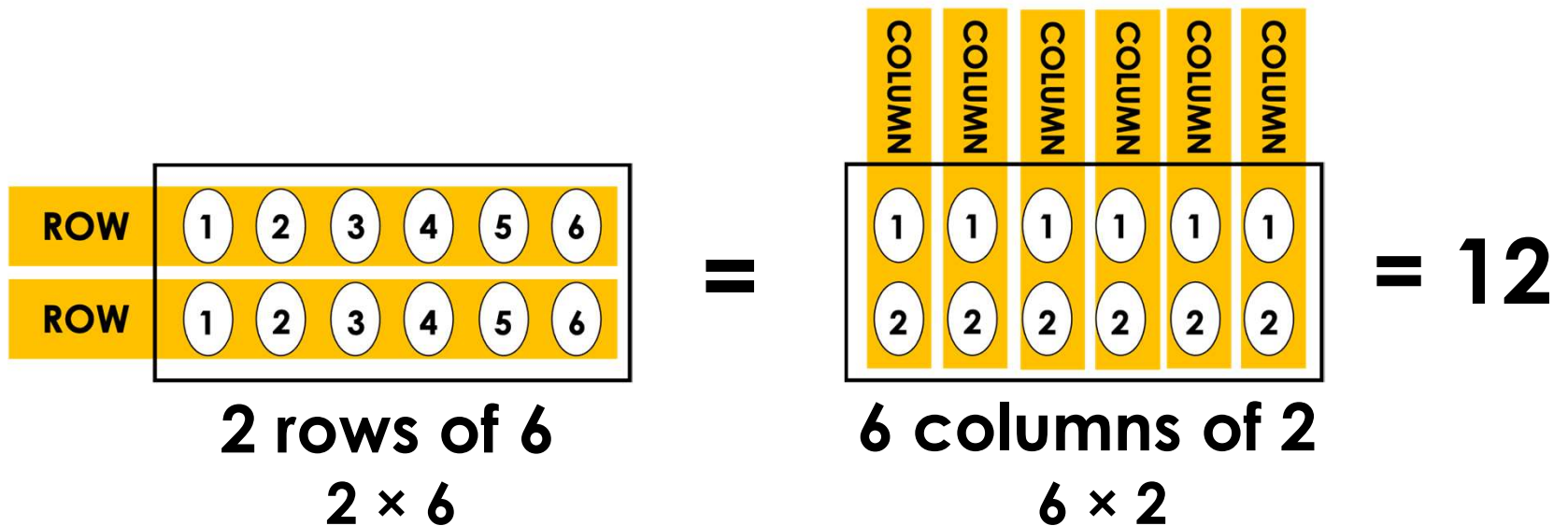
I can read the equation as:
6 groups of 2
is the same as 12

$$\begin{array}{ccccccc} \underline{6} & \times & \underline{2} & = & \underline{12} \\ \text{(# of groups)} & & \text{(# of objects in each group)} & & \text{(Total Number of Objects)} \end{array}$$



Let's Review

We can interpret arrays in different ways. However, the product remains the same.

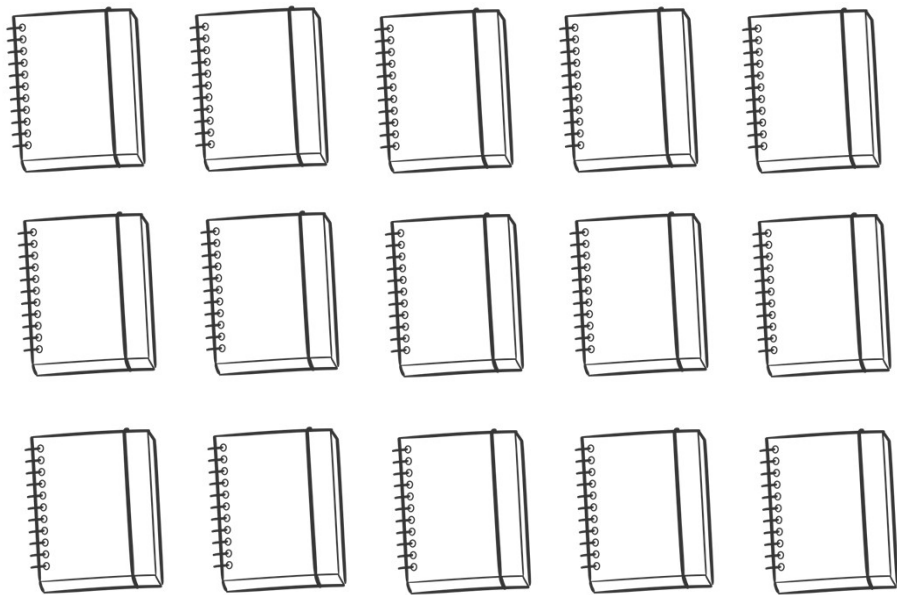




LET'S WORK TOGETHER

 **Problem #1**
LET'S WORK TOGETHER

Alicia neatly organized the class journals.

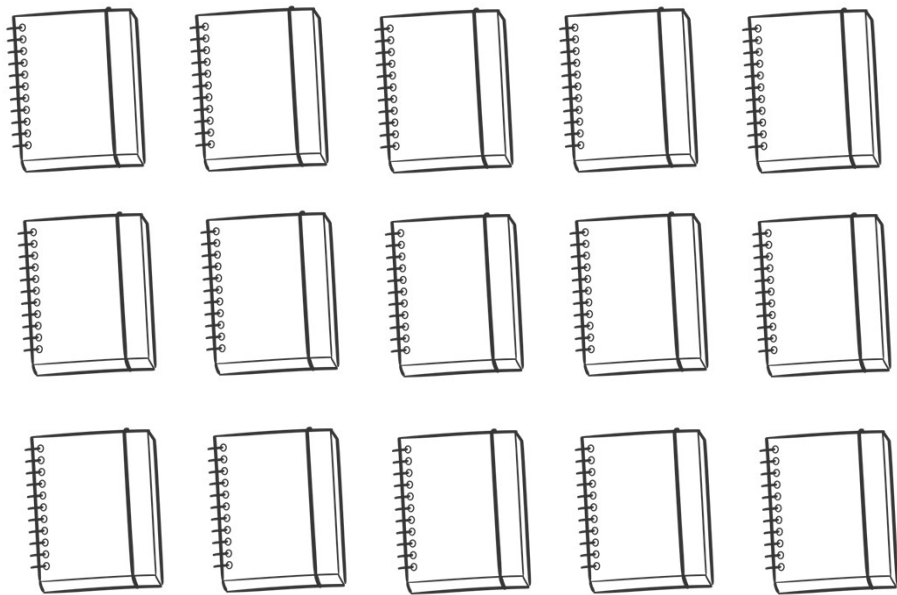


How many rows of journals are there?

There are 3 rows of journals!

 **Problem #1**
LET'S WORK TOGETHER

Alicia neatly organized the class journals.

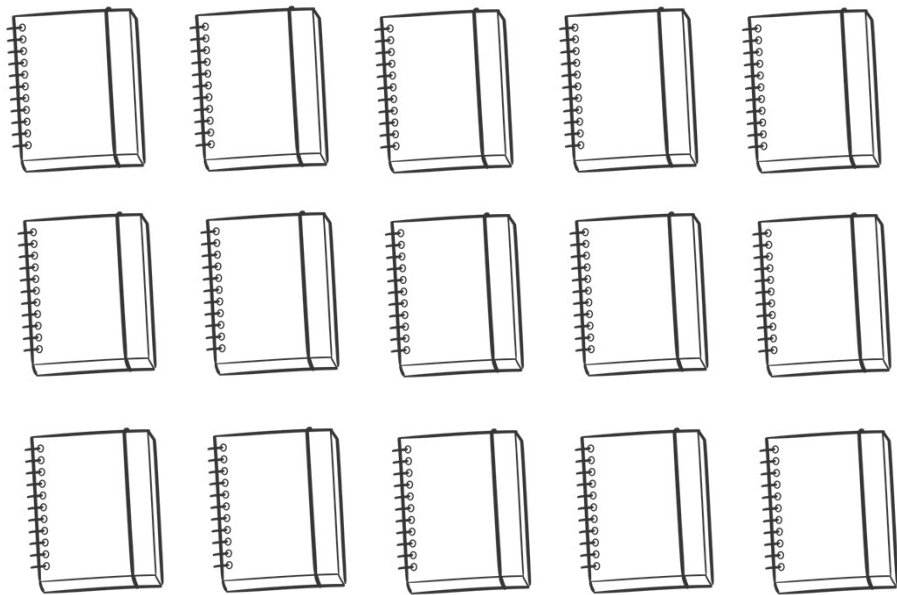


How many journals are
in each row?

There are 5 journals
in each row.

 **Problem #1**
LET'S WORK TOGETHER

Alicia neatly organized the class journals.



What multiplication equation can we create to find out the total number of journals?

$$3 \times 5 = 15$$



Let's Review

We can read equations in sentence form.
The symbols in an equation can be read as words.

$$3 \times 5 = 15$$

↑ ↑
“groups of” “is the same as”

3 groups of 5 is the same as 15

CHECK - IN

- What did you notice?
- Can you make a connection to anything else you already know? How?
- Do you have any questions?



IT'S YOUR TURN

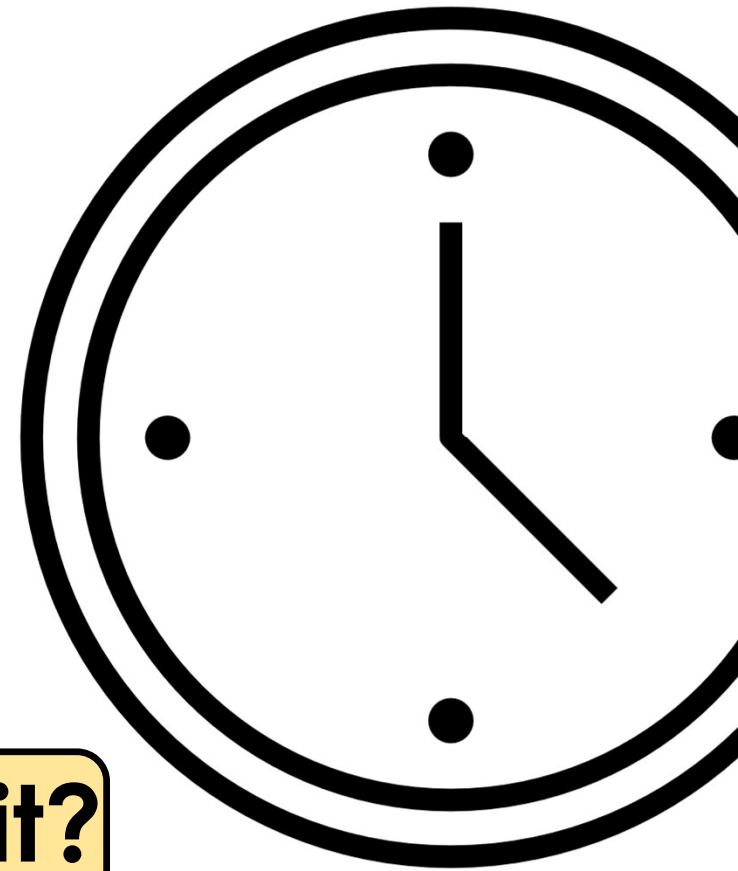


Now It's **“YOUR TURN”** to Solve



Don't forget to show your work!

Time to **Discuss** and **Check** Your Answers



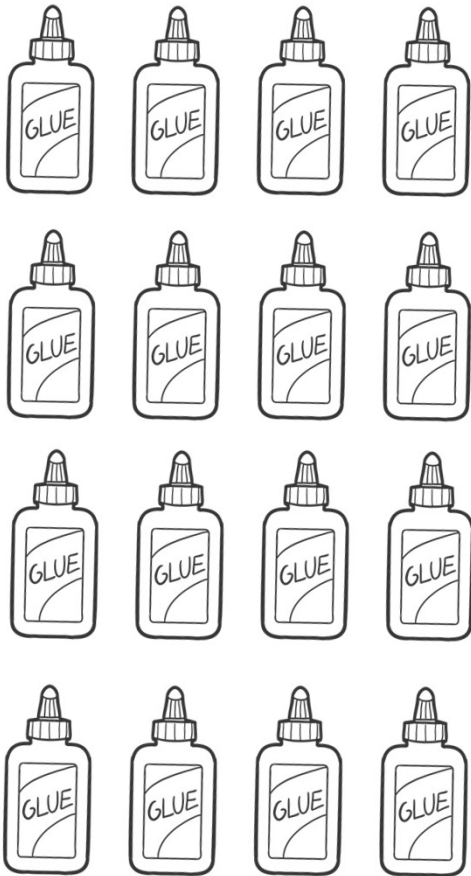
How did you solve it?



Problem #1

YOUR TURN

Fill in the blanks and create an equation.



Jill organized bottles of glue.

There are _____ rows of glue bottles.

Each row has _____ glue bottles.

Create a multiplication equation:

$$\begin{array}{c}
 \underline{\hspace{2cm}} \\
 \text{(# of groups)}
 \end{array}
 \times
 \begin{array}{c}
 \underline{\hspace{2cm}} \\
 \text{(# of objects in each group)}
 \end{array}
 =
 \begin{array}{c}
 \underline{\hspace{2cm}} \\
 \text{(Total Number of Objects)}
 \end{array}$$



Problem #1

YOUR TURN

Fill in the blanks and create an equation.



Jill organized bottles of glue.

There are 4 rows of glue bottles.

Each row has 4 glue bottles.

Create a multiplication equation:

$$\begin{array}{ccc} \underline{4} & \times & \underline{4} = \underline{16} \\ \text{(# of groups)} & & \text{(# of objects in each group)} \quad \text{(Total Number of Objects)} \end{array}$$



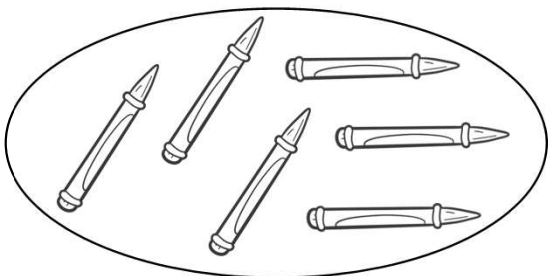
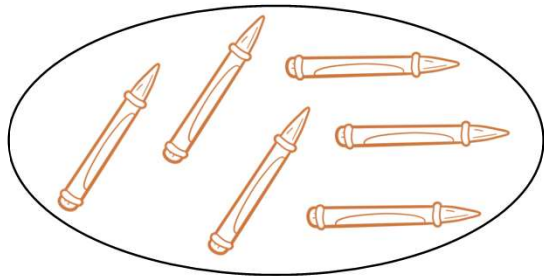
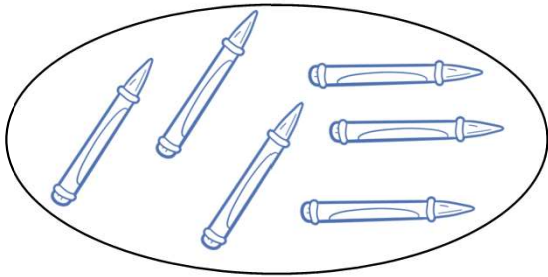
Problem #2

YOUR TURN

Fill in the blanks and create an equation.

Will sorted crayons into 3 groups of 6.

Rearrange the crayons to show an array of 3 rows of 6 crayons.



$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

(# of groups) (# of objects in each group) (Total Number of Objects)



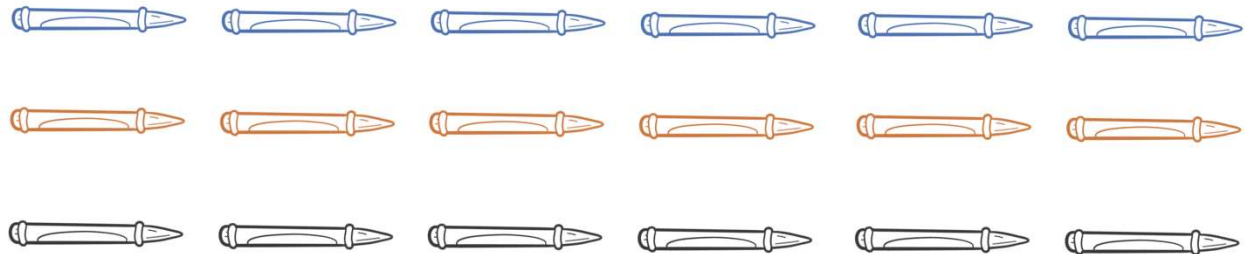
Problem #2

YOUR TURN

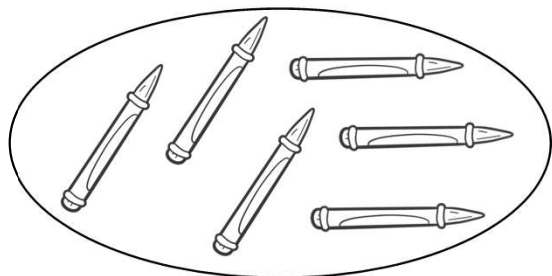
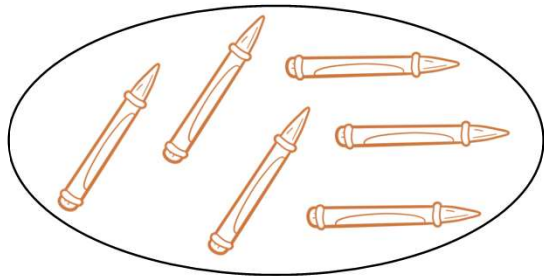
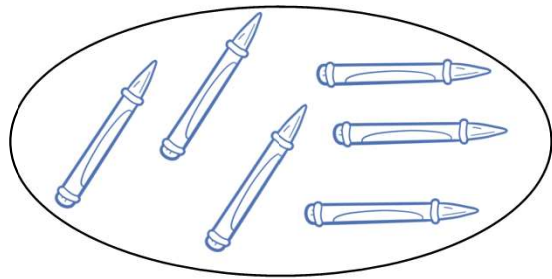
Fill in the blanks and create an equation.

Will sorted crayons into 3 groups of 6.

Rearrange the crayons to show an array of 3 rows of 6 crayons.



$$\begin{array}{ccccccc} \underline{\quad 3 \quad} & \times & \underline{\quad 6 \quad} & = & \underline{\quad 18 \quad} \\ \text{(\# of groups)} & & \text{(\# of objects in each group)} & & \text{(Total Number of Objects)} \end{array}$$



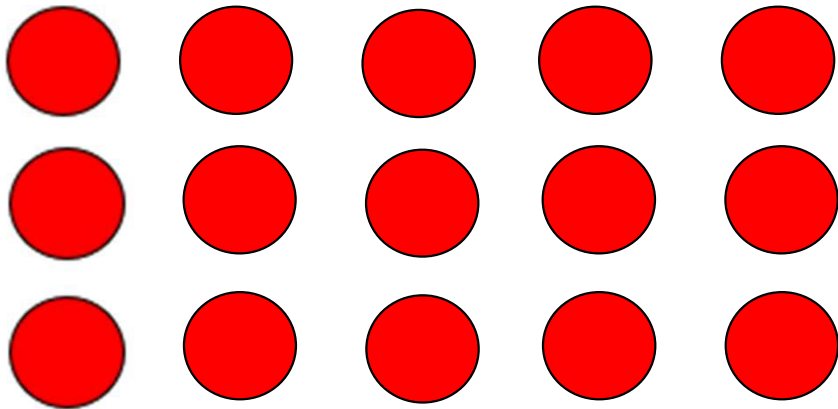


Problem #3

YOUR TURN

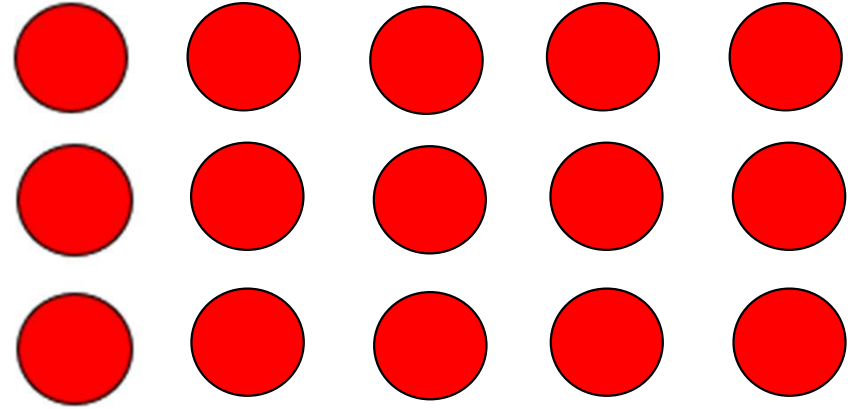
Circle the groups and fill in the blanks.

3 rows 5 circles



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

5 columns of 3 circles



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

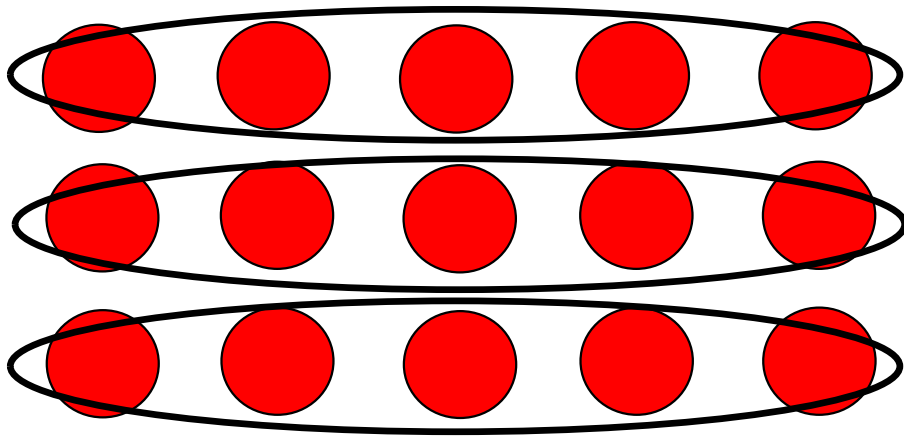


Problem #3

YOUR TURN

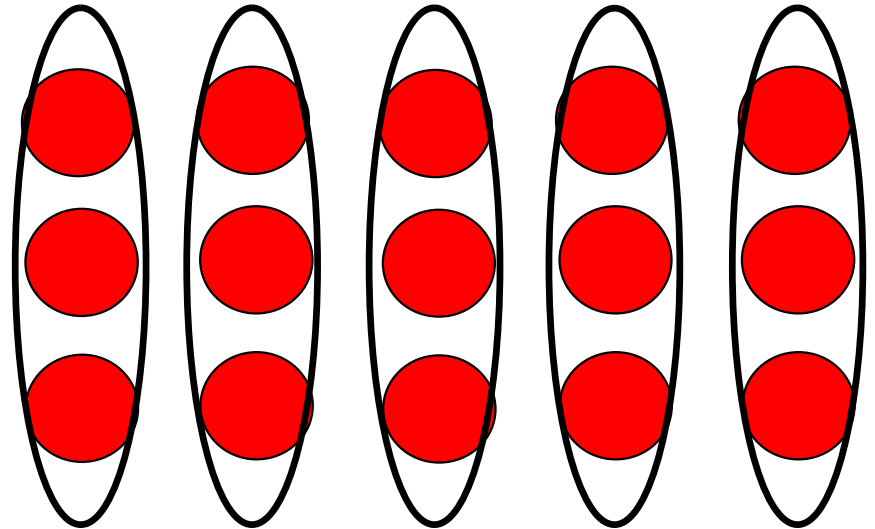
Circle the groups and fill in the blanks.

3 rows 5 circles



$$\underline{3} \times \underline{5} = \underline{15}$$

5 columns of 3 circles



$$\underline{5} \times \underline{3} = \underline{15}$$

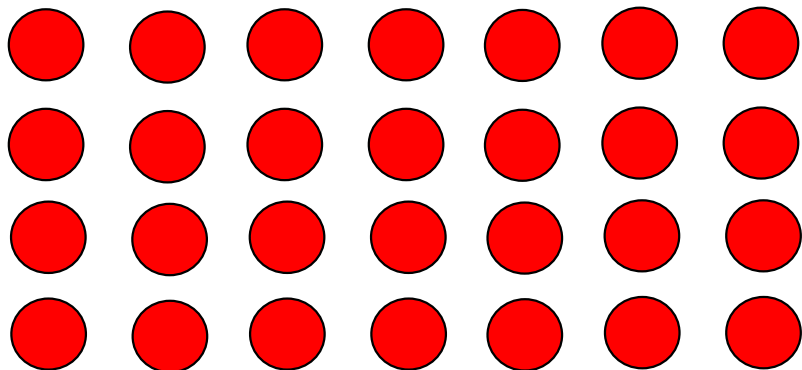


Problem #4

YOUR TURN

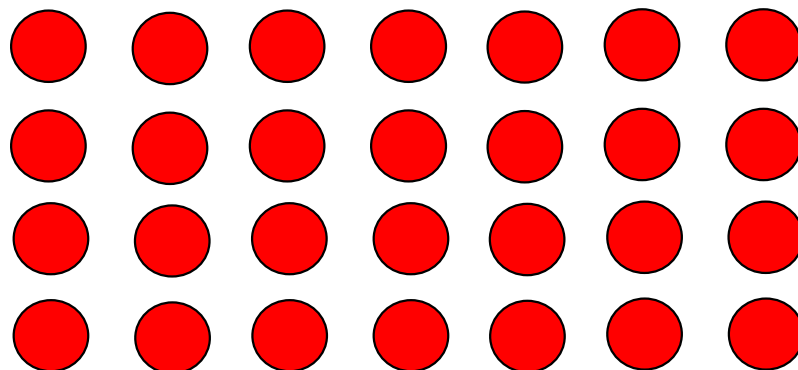
Circle the groups and fill in the blanks.

4 rows 7 circles



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

7 columns of 4 circles



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

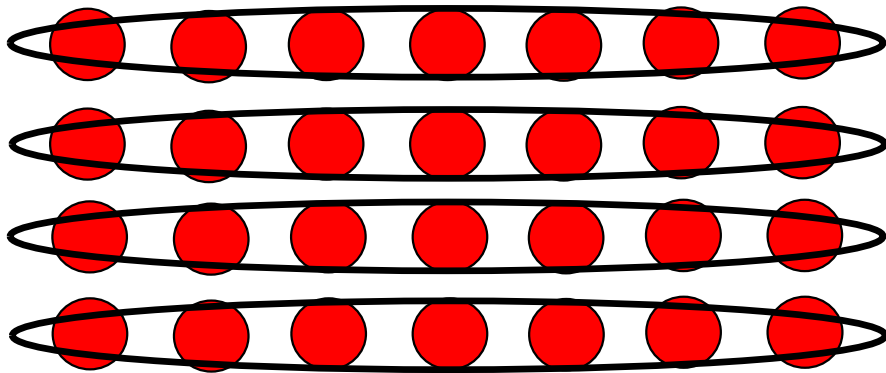


Problem #4

YOUR TURN

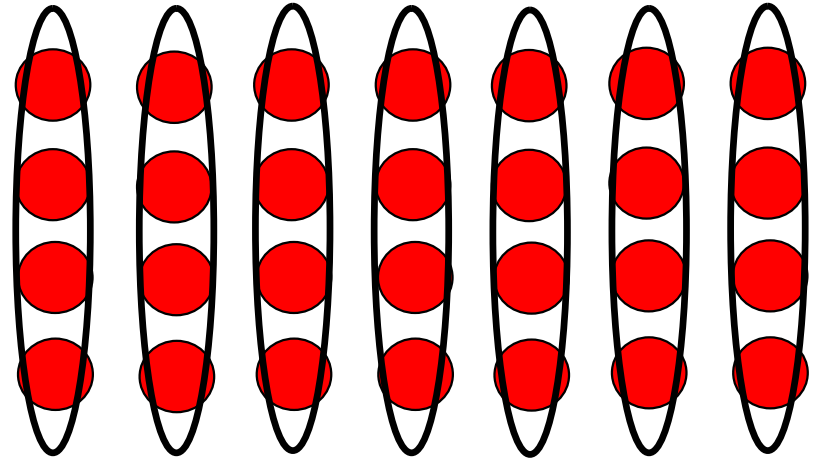
Circle the groups and fill in the blanks.

4 rows 7 circles



$$\underline{4} \times \underline{7} = \underline{28}$$

7 columns of 4 circles



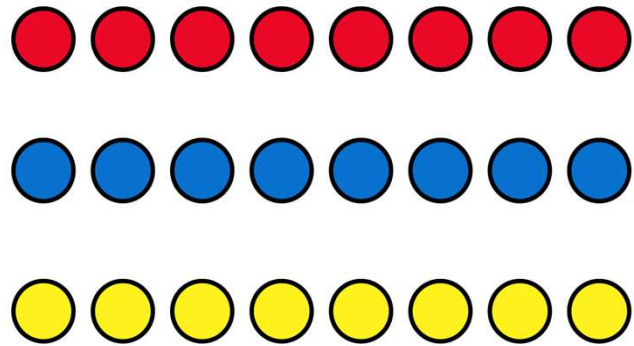
$$\underline{7} \times \underline{4} = \underline{28}$$



Problem #5

YOUR TURN

Fill in the blanks and create an equation.



Maria organized her marble collection.

There are _____ rows of marbles.

Each row has _____ marbles.

Create a multiplication equation:

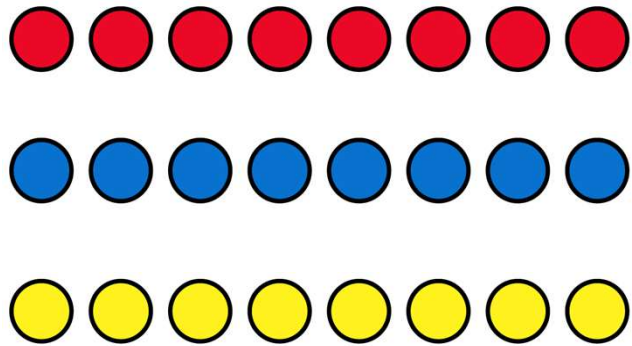
$$\begin{array}{ccc} \underline{\hspace{2cm}} & \times & \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \\ \text{(# of groups)} & & \text{(# of objects in each group)} & & \text{(Total Number of Objects)} \end{array}$$



Problem #5

YOUR TURN

Fill in the blanks and create an equation.



Maria organized her marble collection.

There are **3** rows of marbles.

Each row has **8** marbles.

Create a multiplication equation:

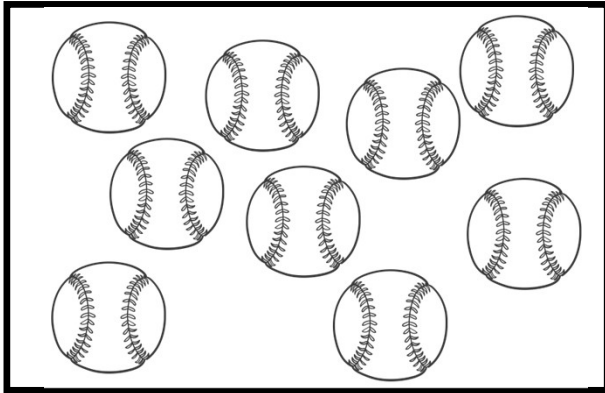
$$\begin{array}{ccc} \underline{\mathbf{3}} & \times & \underline{\mathbf{8}} = \underline{\mathbf{24}} \\ \text{(# of groups)} & & \text{(Total Number of Objects)} \end{array}$$



Problem #6

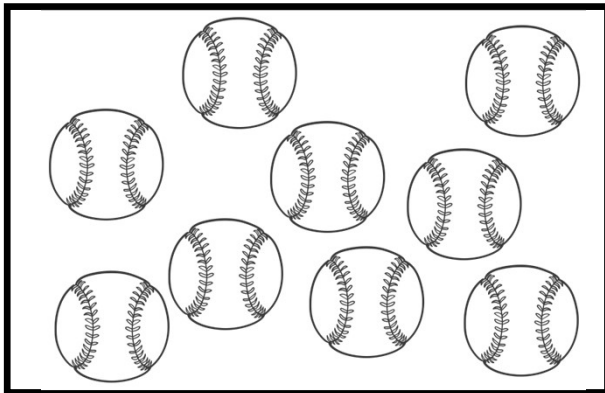
YOUR TURN

Fill in the blanks and create an equation.



Luis sorted baseballs into 2 groups of 9.

Rearrange the baseballs to show an array of 2 rows of 9 baseballs.



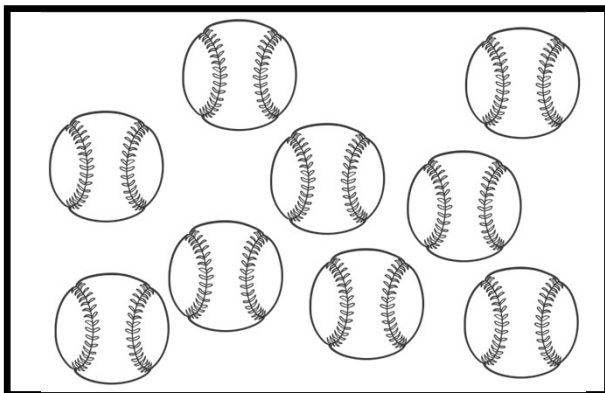
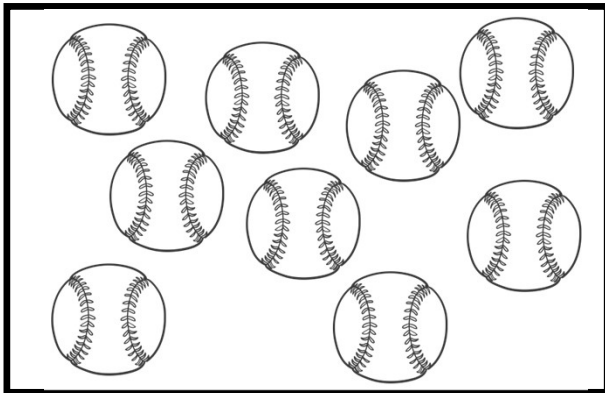
$$\begin{array}{c} \underline{\hspace{2cm}} \\ \text{(# of groups)} \end{array} \times \begin{array}{c} \underline{\hspace{2cm}} \\ \text{(# of objects in each group)} \end{array} = \begin{array}{c} \underline{\hspace{2cm}} \\ \text{(Total Number of Objects)} \end{array}$$



Problem #6

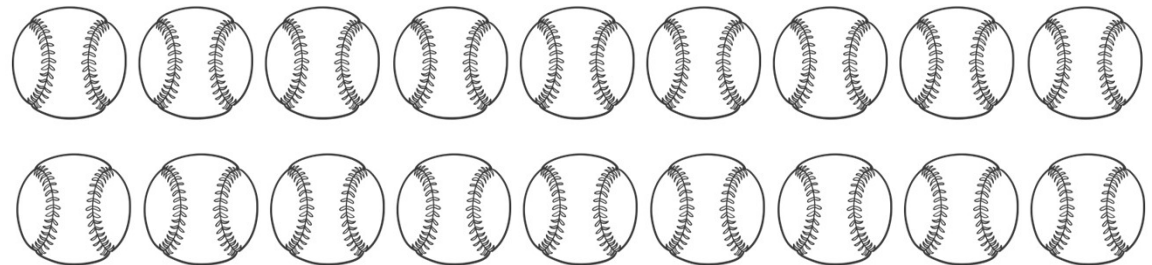
YOUR TURN

Fill in the blanks and create an equation.



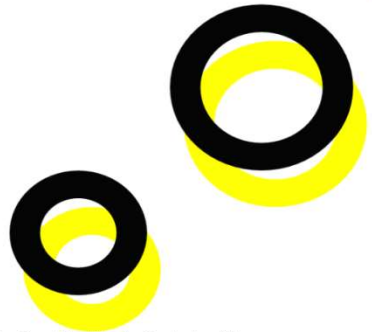
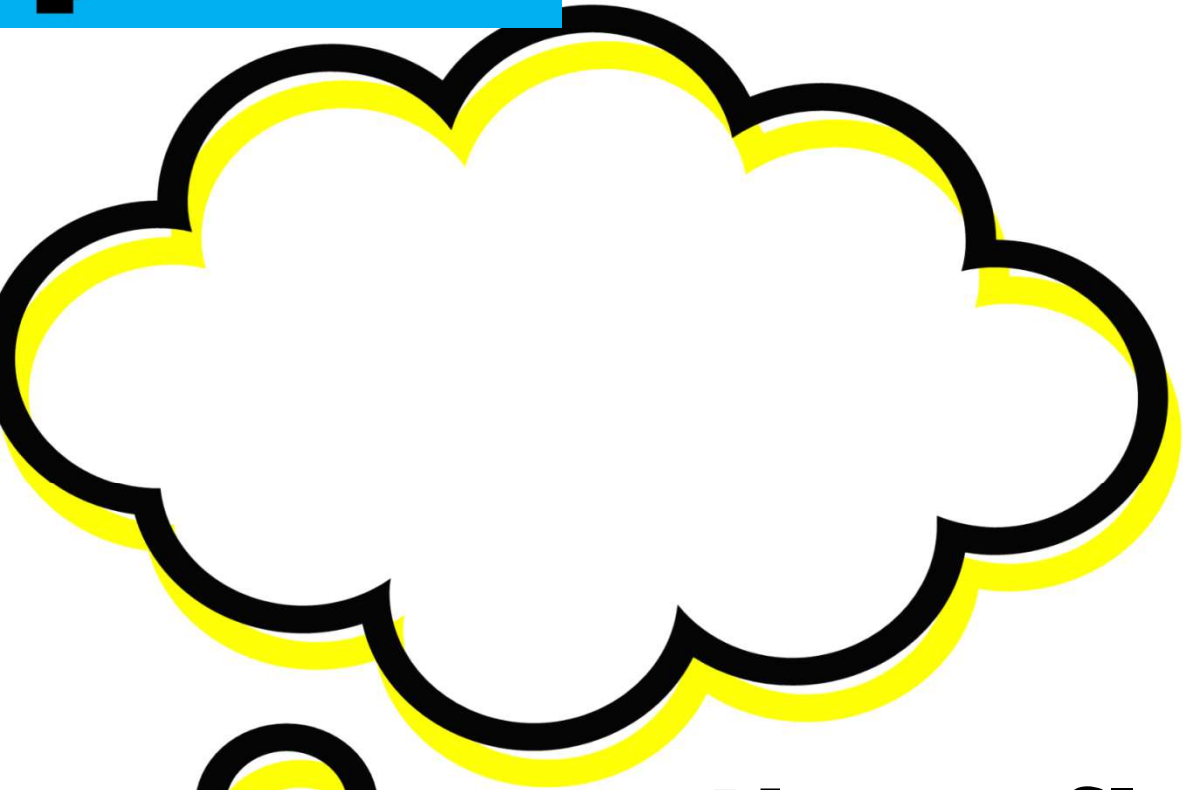
Luis sorted baseballs into 2 groups of 9.

Rearrange the baseballs to show an array of 2 rows of 9 baseballs.



$$\begin{array}{ccccccc} \underline{2} & \times & \underline{9} & = & \underline{18} \\ \text{(# of groups)} & & \text{(# of objects in each group)} & & \text{(Total Number of Objects)} \end{array}$$

 **Let's Reflect**



It's reflection time!

