UNDERSTANDING

MULTIPLICATION AND DIVISION

RELATE MULTIPLICATION AND DIVISION – PT. 1

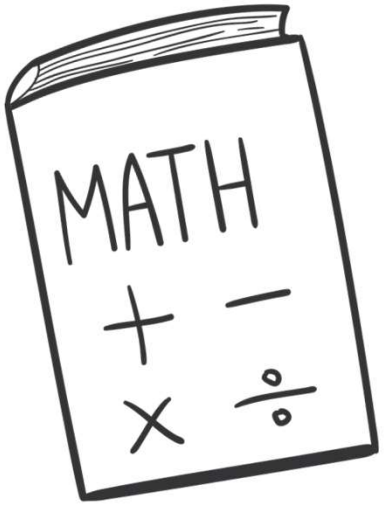
LESSON 8

TODAY'S OBJECTIVE

Today we will use arrays to relate multiplication and division.

TAKE OUT YOUR

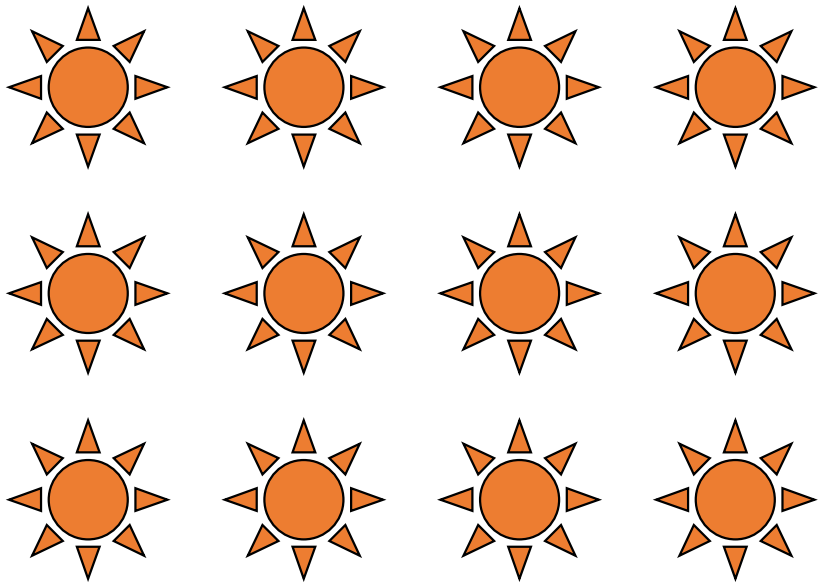
MATH JOURNALS



WATCH ME FIRST

Today we are going explore the relationship between multiplication and division using arrays.

Array models help us represent multiplication and division.

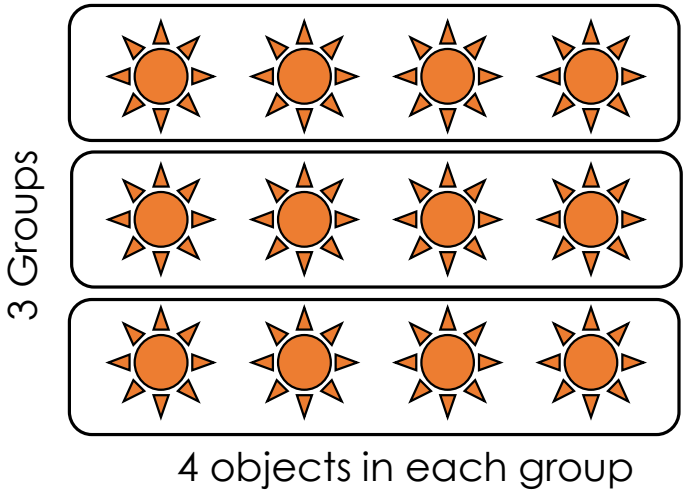


Let's Review...

One factor in a multiplication equation represents the number of groups. The other factor represents the number of objects in each group. The product represents the total number of objects.

$$\underset{\text{(\# of groups)}}{3} \times \underset{\text{(\# of objects in a group)}}{4} = \underset{\text{(Total \# of Objects)}}{12}$$

factor ***factor*** ***product***



WATCH ME FIRST

Watch me solve this problem by creating an array.

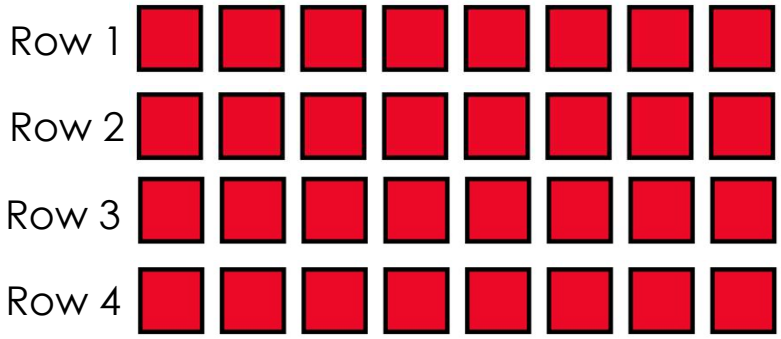
Pat has 32 square tiles. If she places 8 squares in each row, how many rows of squares will there be? Draw an array and fill in the blanks.

Row 1 

First, I'll create a row of 8 squares.

WATCH ME FIRST

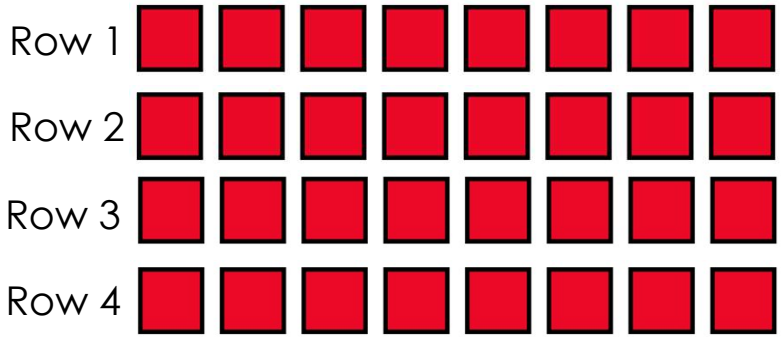
Pat has 32 square tiles. If she places 8 squares in each row, how many rows of squares will there be? Draw an array and fill in the blanks.



Next, I'll create rows of 8 squares until I have 32 square tiles in total.

WATCH ME FIRST

Pat has 32 square tiles. If she places 8 squares in each row, how many rows of squares will there be? Draw an array and fill in the blanks.



There are 4 rows of squares.

4 × 8 = 32

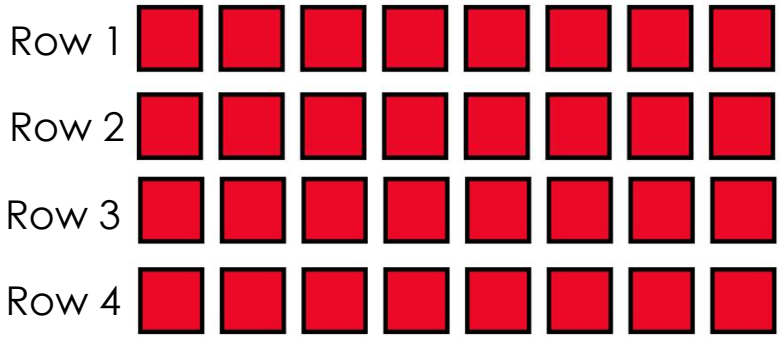
32 ÷ 8 = 4

Now I'm going to use my array model to fill in the blanks.

WATCH ME FIRST

Finally, I'll answer some questions using my array and the matching equations.

Pat has 32 square tiles. If she places 8 squares in each row, how many rows of squares will there be? Draw an array and fill in the blanks.



There are 4 rows of squares.

4 × 8 = 32

32 ÷ 8 = 4

What does the 8 represent in both equations?

8 represents the number of squares in each row.

What does the 32 represent in both equations?

32 represents the total number of squares.

What is the quotient? What does it represent?

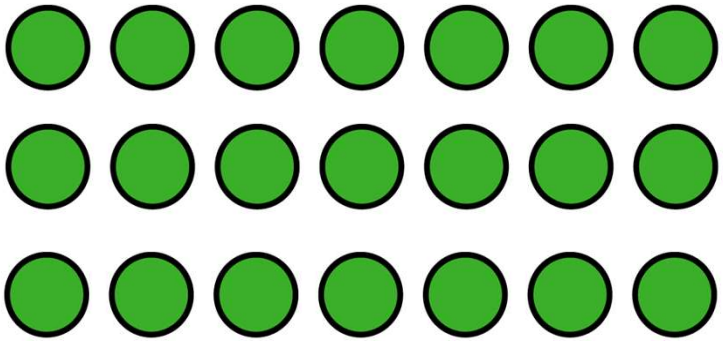
4 represents the number of groups.

LET'S WORK TOGETHER

Problem #1
LET'S WORK TOGETHER

Let's solve this one together.

Finish the array to show 21 ÷ 7.



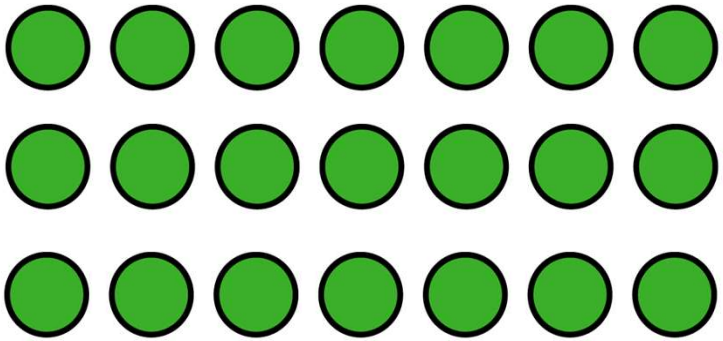
In order to finish the array, let's figure out how many rows we need to add.

We need to add 2 more rows!

Problem #1
LET'S WORK TOGETHER

Use the array to fill in the blanks.

Finish the array to show 21 ÷ 7.



How many rows do we have all together?

There are 3 rows of circles.

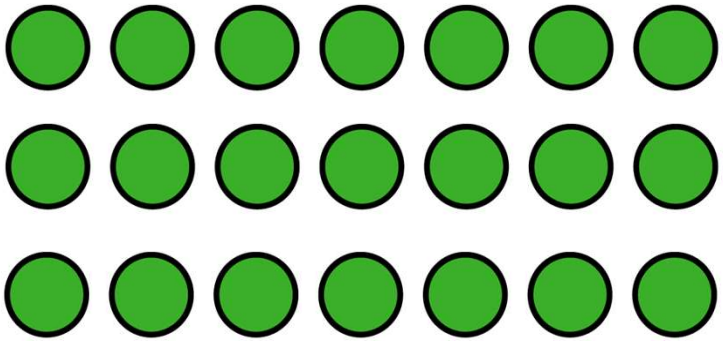
There are 7 circles in each row.

How many circles are in each row?

Problem #1
LET'S WORK TOGETHER

Use the array to answer the questions.

Finish the array to show 21 ÷ 7.



There are 3 rows of circles.

There are 7 circles in each row.

What's the missing number in both equations?

21 ÷ 7 = **3** **3** × 7 = 21

What does the 21 represent in both equations?

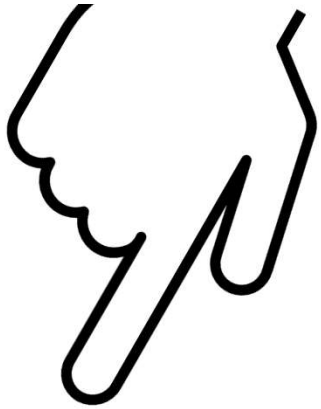
21 represents the total number of circles.

Which number represents the number of groups?

3 represents the number of groups.

CHECK - IN

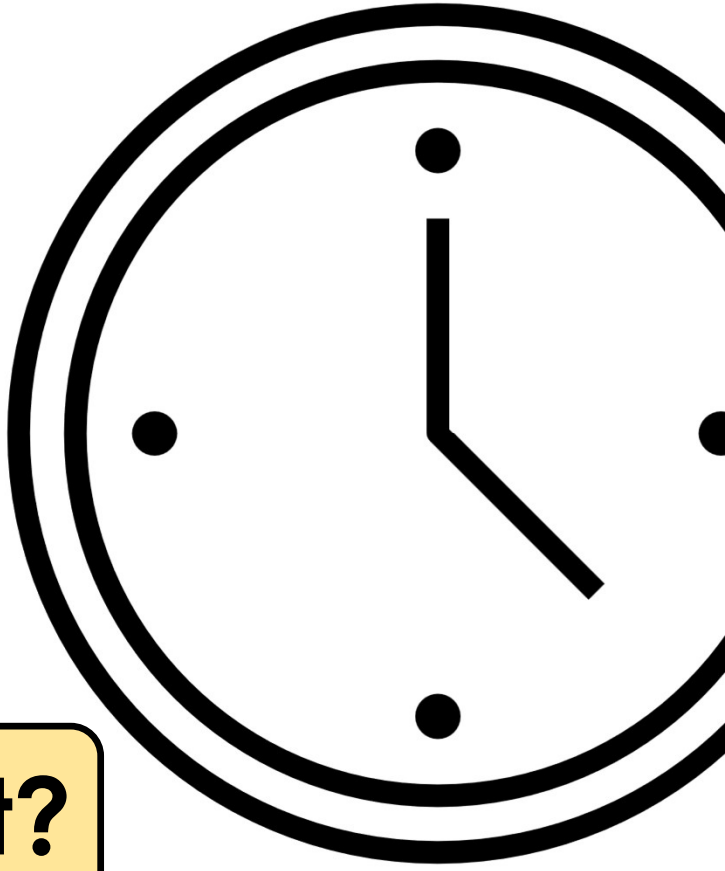
- ❑ What did you notice?
- ❑ Can you make a connection to anything else you already know? How?
- ❑ Do you have any questions?



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

Kelly has 24 rocks in her collection. She placed them all on a table so that her classmates could see them. Kelly arranged 4 rocks in each row. How many rows were there? Draw a model and answer the questions.

There are ____ rows of rocks.

24 ÷ ____ = ____

____ × 4 = ____

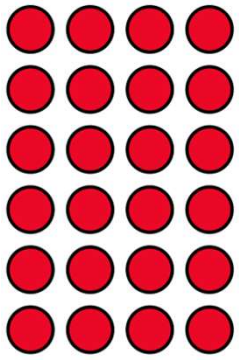
What does the 4 represent in both equations?

What does the 24 represent in both equations?

Which number represents the number of groups?

Problem #1
YOUR TURN

Kelly has 24 rocks in her collection. She placed them all on a table so that her classmates could see them. Kelly arranged 4 rocks in each row. How many rows were there? Draw a model and answer the questions.



There are 6 rows of rocks.

$$24 \div 4 = 6$$

$$6 \times 4 = 24$$

What does the 4 represent in both equations?

4 represents the number of rocks in each row.

What does the 24 represent in both equations?

24 represents the total number of rocks.

Which number represents the number of groups?

6 represents the number of groups.

Problem #2
YOUR TURN

Finish the array to show 27 ÷ 9.
Next, fill in the blanks and answer the questions.

There are _____ rows of squares.

There are _____ squares in each row.

What are the missing numbers?

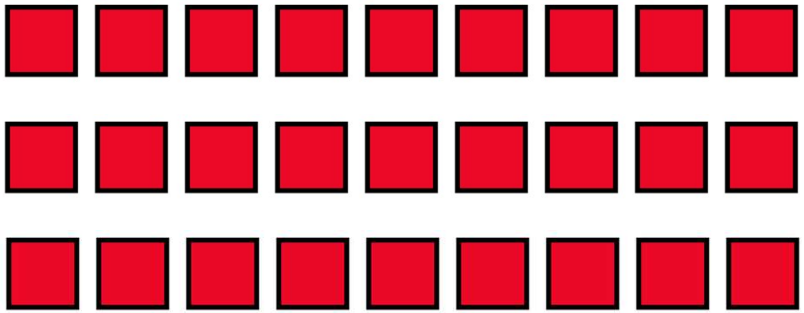
27 ÷ 9 = ___ ___ × ___ = 27

What does the 27 represent in both equations?

Which number represents the number of groups?

Problem #2
YOUR TURN

Finish the array to show 27 ÷ 9.
Next, fill in the blanks and answer the questions.



There are 3 rows of squares.

There are 9 squares in each row.

What are the missing numbers?

27 ÷ 9 = **3** **3** × **9** = 27

What does the 27 represent in both equations?

27 represents the total number of squares.

Which number represents the number of groups?

3 represents the number of groups.

Problem #3
YOUR TURN

Alicia makes 30 cookies and puts them into bags.
If each bag can hold 6 cookies, how many bags does she need?
Draw a model and answer the questions.

There are ____ bags of cookies.

30 ÷ ____ = ____

____ × **6** = ____

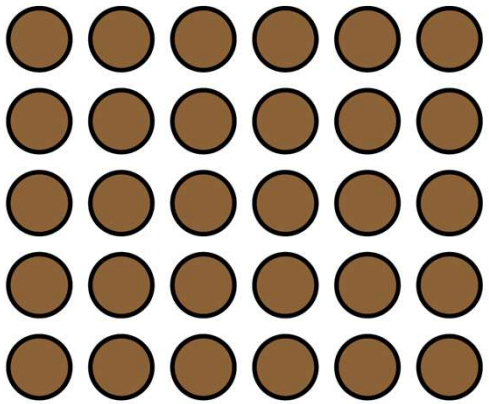
What does the 6 represent in both equations?

What does the 30 represent in both equations?

Which number represents the number of groups?

Problem #3
YOUR TURN

Alicia makes 30 cookies and puts them into bags.
If each bag can hold 6 cookies, how many bags does she need?
Draw a model and answer the questions.



There are 5 bags of cookies.

$$30 \div 6 = 5$$

$$5 \times 6 = 30$$

What does the 6 represent in both equations?

6 represents the number of cookies in each group.

What does the 30 represent in both equations?

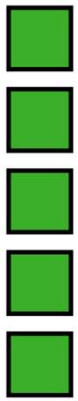
30 represents the total number of cookies.

Which number represents the number of groups?

5 represents the number of groups.

Problem #4
YOUR TURN

Finish the array to show 15 ÷ 5.
Next, fill in the blanks and answer the questions.



There are _____ columns of squares.

There are _____ squares in each column.

What are the missing numbers?

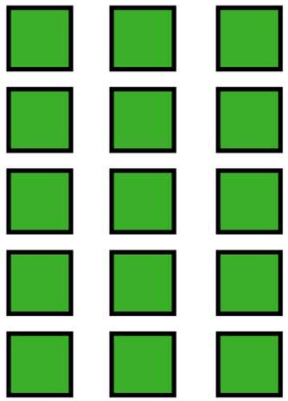
15 ÷ 5 = ___ ___ × 5 = ___

What does the 15 represent in both equations?

Which number represents how many in each group?

Problem #4
YOUR TURN

Finish the array to show 15 ÷ 5.
Next, fill in the blanks and answer the questions.



There are 3 columns of squares.

There are 5 squares in each column.

What are the missing numbers?

15 ÷ 5 = **3** **3** × 5 = **15**

What does the 15 represent in both equations?

15 represents the total number of squares.

Which number represents how many in each group?

5 represents the number of objects (squares) in each group.

Problem #5
YOUR TURN

Ben planted 36 rose bushes. He planted the same number of bushes in each of the 4 rows. How many bushes are in each row? Draw a picture and answer the questions.

There are ____ rows of bushes.

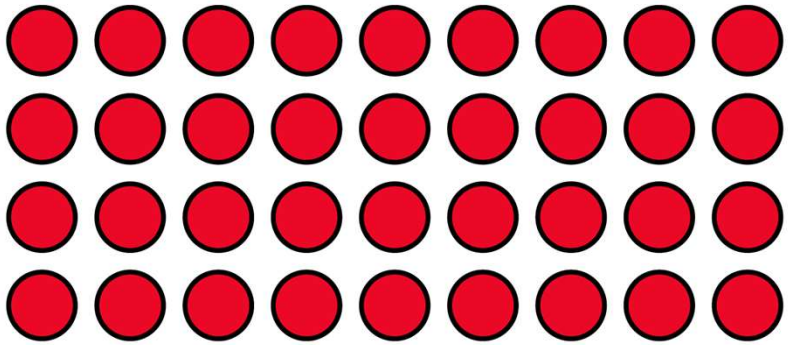
36 ÷ _____ = _____

4 × _____ = _____

What does the 4 represent in both equations?
What does the 36 represent in both equations?
Which number represents how many in each group?

Problem #5
YOUR TURN

Ben planted 36 rose bushes. He planted the same number of bushes in each of the 4 rows. How many bushes are in each row? Draw a picture and answer the questions.



There are 4 rows of bushes.

$$36 \div 4 = 9$$

$$4 \times 9 = 36$$

What does the 4 represent in both equations?

4 represents the number of groups.

What does the 36 represent in both equations?

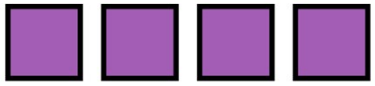
36 represents the total number of bushes.

Which number represents how many in each group?

9 represents the number of objects (bushes) in each group.

Problem #6
YOUR TURN

Finish the array to show 20 ÷ 4.
Next, fill in the blanks and answer the questions.



There are _____ rows of squares.

There are _____ squares in each row.

What are the missing numbers?

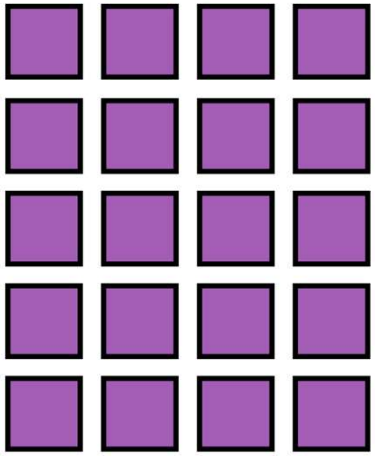
20 ÷ 4 = ____ ____ × 4 = ____

What does the 20 represent in both equations?

Which number represents how many in each group?

Problem #6
YOUR TURN

Finish the array to show 20 ÷ 4.
Next, fill in the blanks and answer the questions.



There are 5 rows of squares.

There are 4 squares in each row.

What are the missing numbers?

20 ÷ 4 = **5** **5** × 4 = **20**

What does the 20 represent in both equations?

20 represents the total number of squares.

Which number represents how many in each group?

4 represents the number of objects (squares) in each group.

Let's Reflect

It's reflection time!