UNDERSTANDING

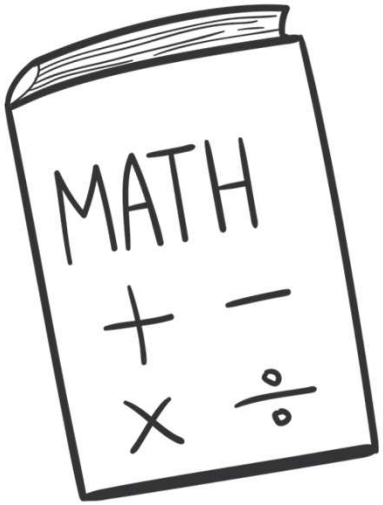
MULTIPLICATION AND DIVISION

FACT FAMILIES

LESSON 10

TAKE OUT YOUR

MATH JOURNALS



TODAY'S OBJECTIVE

The students will use fact families to find unknown numbers in multiplication or division equations.

WATCH ME FIRST

We are going to explore fact families.

BUT FIRST…WHAT IS A FACT FAMILY?

It is a group of related number sentences.

Did You Also Know?

Fact Families:

- can be related addition and subtraction facts or related multiplication and division facts.
- use the same 3 numbers in all equations.
- usually have 4 related facts with some exceptions, for example, square facts (i.e., 3 × 3 = 9).

Example:

2 × 5 = 10 **10 ÷ 5 = 2**

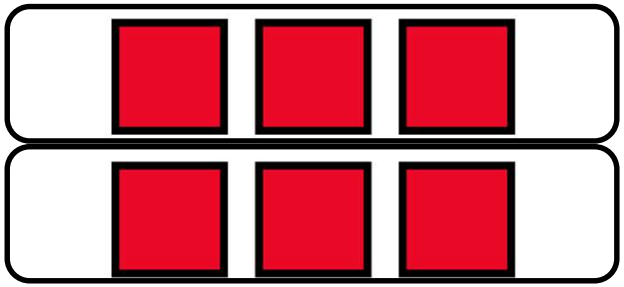
5 × 2 = 10 **10 ÷ 2 = 5**

WATCH ME FIRST

I will highlight the facts that I see and record them below.

Fact Family

I see 2 rows of 3 or 2 x 3 = 6.



Three numbers in the fact family:

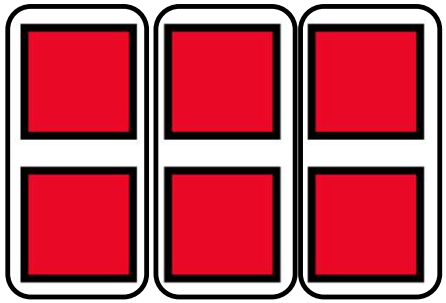
2 × 3 = 6	

WATCH ME FIRST

Let's find another multiplication fact.

Fact Family

I also see 3 columns of 2 or 3 x 2 = 6.



I found two multiplication facts using the array.

Three numbers in the fact family:

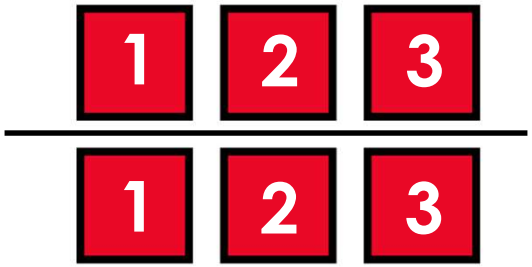
2 × 3 = 6	3 × 2 = 6

WATCH ME FIRST

Now I'm going to find related division facts.

Fact Family

There are 6 squares.
If I divide them into 2 equal groups, 3 squares will be in each group



Three numbers in the fact family:

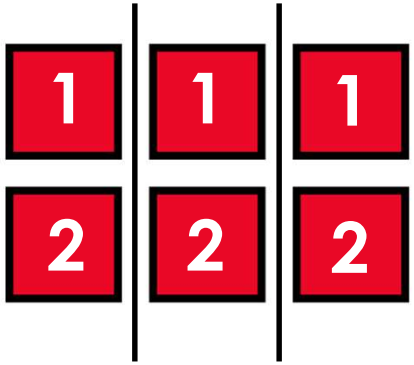
$2 \times 3 = 6$	$3 \times 2 = 6$
$6 \div \underline{2} = \underline{3}$	

WATCH ME FIRST

Let's find another division fact.

Fact Family

There are 6 squares.
If I divide them into 3 equal groups 2 squares will be in each group



Three numbers in the fact family:

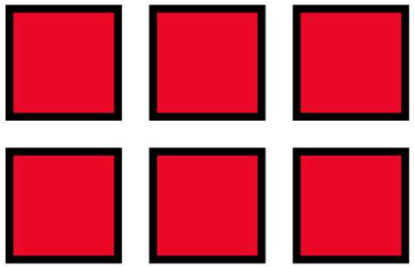
$2 \times 3 = 6$	$3 \times 2 = 6$
$6 \div \underline{\mathbf{2}} = \underline{\mathbf{3}}$	$6 \div \underline{\mathbf{3}} = \underline{\mathbf{2}}$

WATCH ME FIRST

Fact Family

There are 4 related facts that go with the model:

- 2 multiplication facts
- 2 division facts



Three numbers in the fact family:

$2 \times 3 = 6$	$3 \times 2 = 6$
$6 \div 2 = 3$	$6 \div 3 = 2$

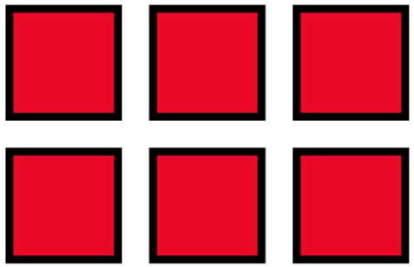
WATCH ME FIRST

Fact Family

Each fact uses the same three numbers. The first number is 2.

There are 4 related facts that go with the model:

- 2 multiplication facts
- 2 division facts



Three numbers in the fact family: **2,**

2 × 3 = 6	3 × **2** = 6
6 ÷ **2** = 3	6 ÷ 3 = **2**

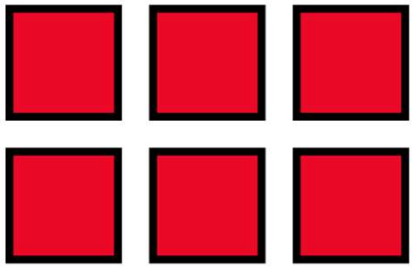
WATCH ME FIRST

Fact Family

The second number is 3.

There are 4 related facts that go with the model:

- 2 multiplication facts
- 2 division facts



Three numbers in the fact family: **2**, **3**,

$2 \times 3 = 6$	$3 \times 2 = 6$
$6 \div 2 = 3$	$6 \div 3 = 2$

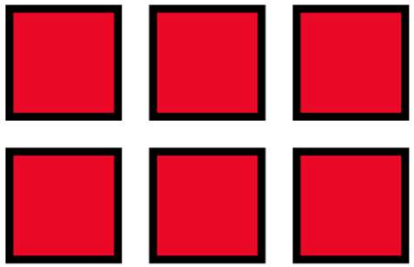
WATCH ME FIRST

Fact Family

The last number is 6.

There are 4 related facts that go with the model:

- 2 multiplication facts
- 2 division facts



Three numbers in the fact family: **2, 3, 6**

$2 \times 3 = 6$	$3 \times 2 = 6$
$6 \div 2 = 3$	$6 \div 3 = 2$

Let's Review

Multiplication Fact

2	×	3	=	6
factor		factor		product

Division Fact

6	÷	2	=	3
dividend		divisor		quotient

Multiplication facts can help me find related division facts.

Let's Review

Multiplication Fact

$$\underset{\text{factor}}{2} \times \underset{\text{factor}}{3} = \underset{\text{product}}{6}$$

Division Fact

$$\underset{\text{dividend}}{6} \div \underset{\text{divisor}}{2} = \underset{\text{quotient}}{3}$$

The product in the multiplication fact is the dividend in the division fact.

Let's Review

Multiplication Fact

$$\underset{\text{factor}}{2} \times \underset{\text{factor}}{3} = \underset{\text{product}}{6}$$

Division Fact

$$\underset{\text{dividend}}{6} \div \underset{\text{divisor}}{2} = \underset{\text{quotient}}{3}$$

The factors 2 and 3 in the multiplication fact are the divisor and the quotient in the related division fact.

LET'S WORK TOGETHER

Problem #1
LET'S WORK TOGETHER

Use the completed fact to draw an array. Fill in the blanks.

Fact Family

What does 5 x 3 mean? What should we do first?

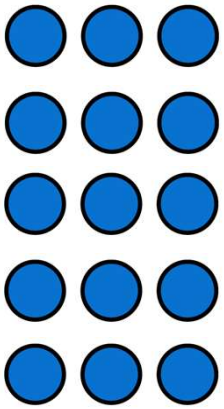
Three numbers in the fact family:

5 × 3 = 15	? × ? = 15
15 ÷ ? = ?	? ÷ ? = ?

Problem #1
LET'S WORK TOGETHER

Fact Family

5 x 3 means 5 groups of 3 = 15. So, we'll create groups of 3.



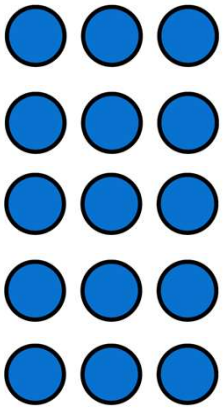
Three numbers in the fact family:

$5 \times 3 = 15$	$? \times ? = 15$
$15 \div ? = ?$	$? \div ? = ?$

Problem #1
LET'S WORK TOGETHER

Fact Family

Looking at the columns, what groups can we make?



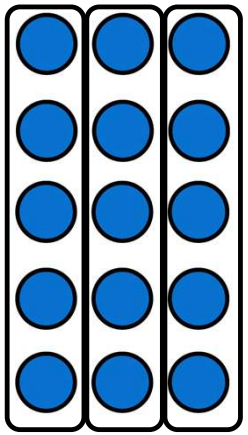
Three numbers in the fact family:

$5 \times 3 = 15$	$? \times ? = 15$
$15 \div ? = ?$	$? \div ? = ?$

Problem #1
LET'S WORK TOGETHER

Fact Family

We can create 3 groups of 5. That is 3 x 5 = 15. Let's write that next.



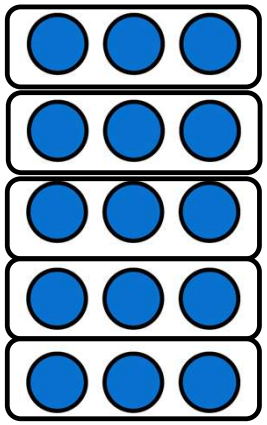
Three numbers in the fact family:

5 × 3 = 15	3 × 5 = 15
15 ÷ ? = ?	? ÷ ? = ?

Problem #1
LET'S WORK TOGETHER

Fact Family

Now let's divide the 15 circles into 5 equal groups. How many circles are in each group?



There are 3 circles in each group. Let's write that below.

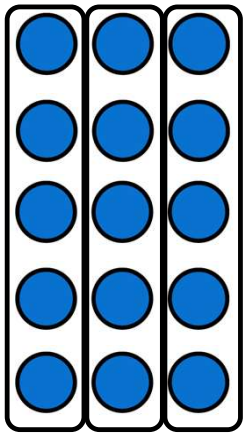
Three numbers in the fact family:

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

Problem #1
LET'S WORK TOGETHER

Fact Family

Last, we'll divide the 15 circles into 3 equal groups. How many are in each group?



There are 5 circles in each group. Let's write that below.

Three numbers in the fact family:

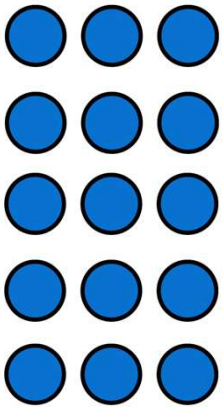
$5 \times 3 = 15$	$3 \times 5 = 15$
$15 \div 5 = 3$	$15 \div 3 = 5$

Problem #1
LET'S WORK TOGETHER

Fact Family

We just created an array and found matching facts.

The three numbers in the fact family are 5, 3 and 15. Let's write them.

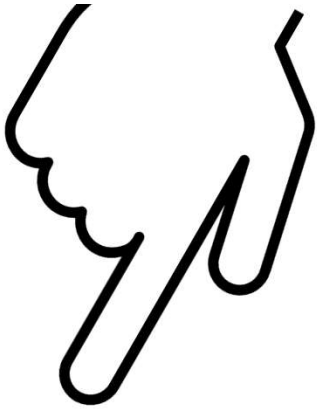


Three numbers in the fact family: **5, 3, 15**

$5 \times 3 = 15$	$3 \times 5 = 15$
$15 \div 5 = 3$	$15 \div 3 = 5$

CHECK - IN

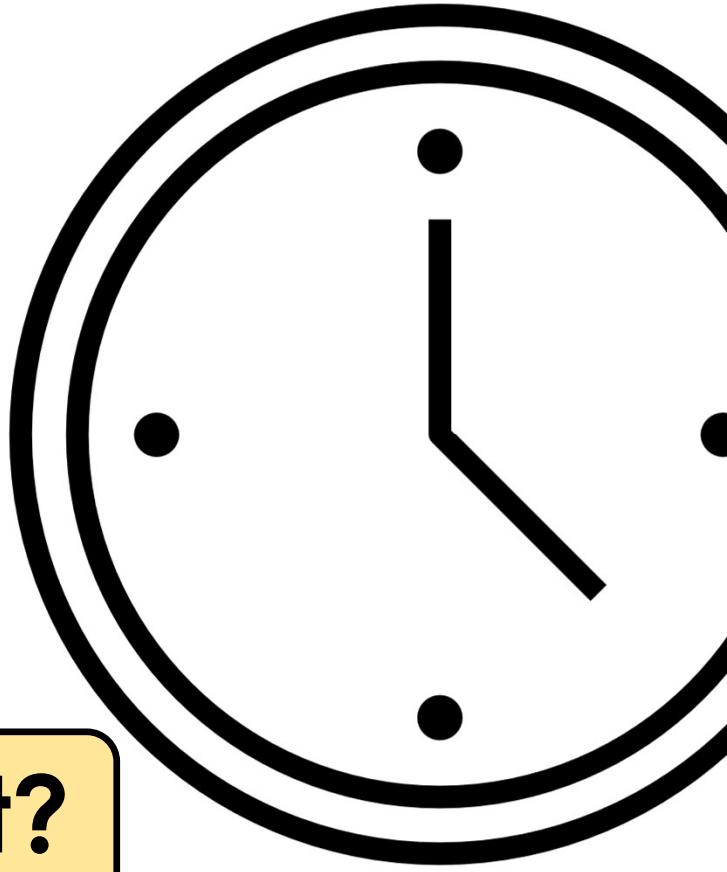
- How can knowing your multiplication facts help you solve a division problem?
- What did you notice?
- Can you make a connection to anything else you already know? How?
- Do you have any questions?



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

Use the completed multiplication equation to draw an array.
Fill in the blanks.

Fact Family

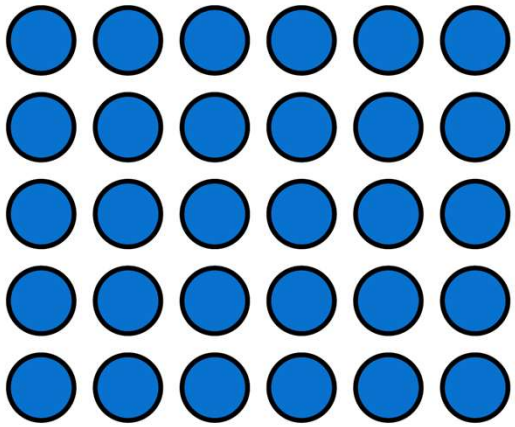
The three numbers in the fact family are:

$5 \times 6 = 30$	$6 \times ? = ?$
$? \div ? = ?$	$? \div ? = ?$

Problem #1
YOUR TURN

Use the completed multiplication equation to draw an array.
Fill in the blanks.

Fact Family



The three numbers in the fact family are: 5, 6, and 30

5 × 6 = 30	6 × **5** = **30**
30 ÷ **6** = **5**	**30** ÷ **5** = **6**

Problem #2
YOUR TURN

Circle all the equations that are in the same fact family as the multiplication fact below. Find the 3 numbers in the fact family.

7 × 4 = 28

Three numbers in the fact family: _____, _____, _____

6 × 4 = 24 28 ÷ 4 = 7 4 + 7 = 11

4 × 7 = 28 28 − 4 = 23 28 ÷ 7 = 4

Problem #2
YOUR TURN

Circle all the equations that are in the same fact family as the multiplication fact below. Find the 3 numbers in the fact family.

7 × 4 = 28

Three numbers in the fact family: 4, 7, 28

6 × 4 = 24

28 ÷ 4 = 7

4 + 7 = 11

4 × 7 = 28

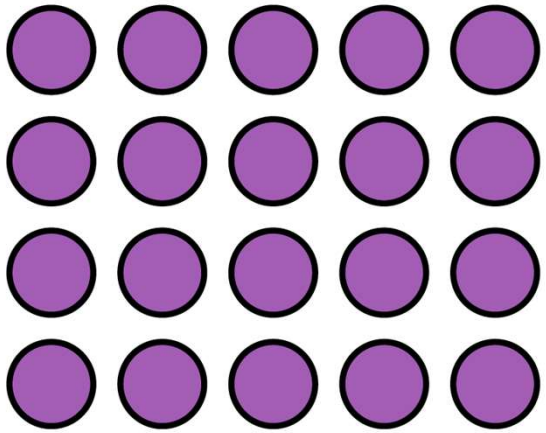
28 − 4 = 23

28 ÷ 7 = 4

Problem #3
YOUR TURN

Fill in the blank fact families below.

Fact Family



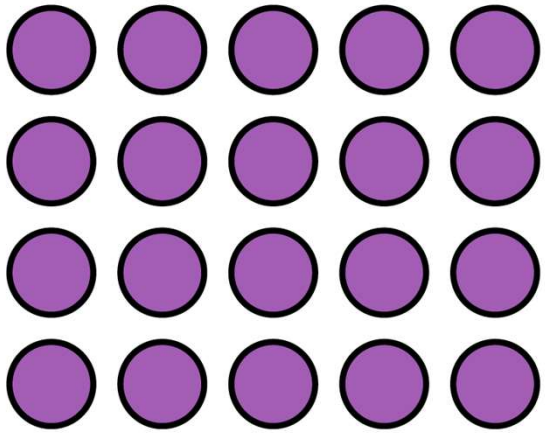
The three numbers in the fact family are:

? × ? = ?	? × ? = ?
? ÷ ? = ?	? ÷ ? = ?

Problem #3
YOUR TURN

Fill in the blank fact families below.

Fact Family



The three numbers in the fact family are: 4, 5, 20

4 × 5 = 20	5 × 4 = 20
20 ÷ 4 = 5	20 ÷ 5 = 4

Problem #4
YOUR TURN

Use the completed multiplication equation to draw an array.
Fill in the blanks.

Fact Family

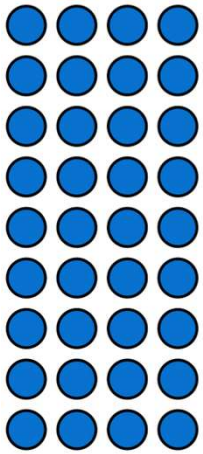
The three numbers in the fact family are:

$9 \times 4 = 36$	$4 \times ? = 36$
$? \div 4 = ?$	$? \div ? = ?$

Problem #4
YOUR TURN

Use the completed multiplication equation to draw an array.
Fill in the blanks.

Fact Family



The three numbers in the fact family are: 4, 9, 36

$9 \times 4 = 36$	$4 \times \underline{9} = 36$
$\underline{36} \div 4 = \underline{9}$	$\underline{36} \div \underline{9} = \underline{4}$

Problem #5
YOUR TURN

Circle all the equations that are in the same fact family as the multiplication fact below. Find the 3 numbers in the fact family.

7 × 8 = 56

Three numbers in the fact family: _____, _____, _____

56 ÷ 8 = 7

56 − 7 = 49

8 + 7 = 15

7 × 7 = 49

8 × 7 = 56

56 ÷ 7 = 8

Problem #5
YOUR TURN

Circle all the equations that are in the same fact family as the multiplication fact below. Find the 3 numbers in the fact family.

7 × 8 = 56

Three numbers in the fact family: 7, 8, 56

56 ÷ 8 = 7

56 − 7 = 49

8 + 7 = 15

7 × 7 = 49

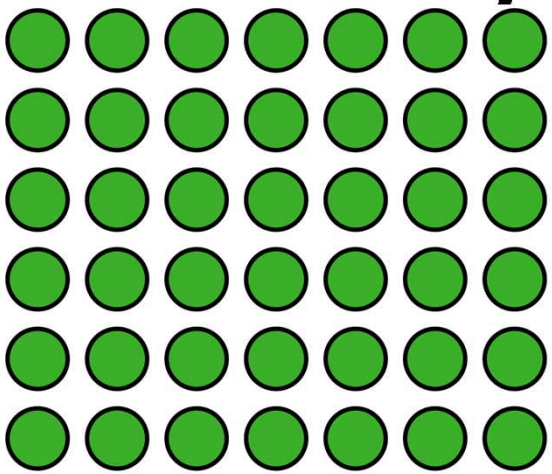
8 × 7 = 56

56 ÷ 7 = 8

Problem #6
YOUR TURN

Fill in the blank fact families below.

Fact Family



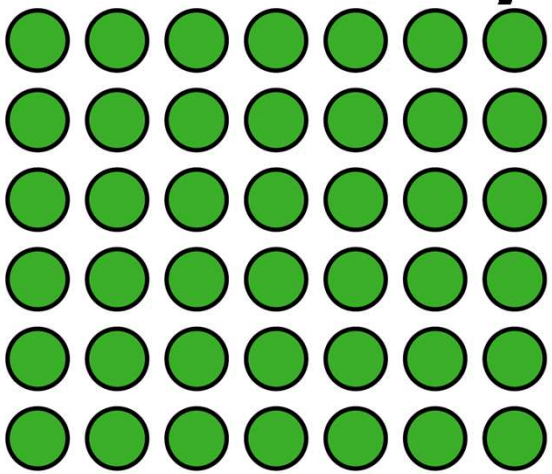
The three numbers in the fact family are:

? × ? = ?	? × ? = ?
? ÷ ? = ?	? ÷ ? = ?

Problem #6
YOUR TURN

Fill in the blank fact families below.

Fact Family



The three numbers in the fact family are: 6, 7, 42

6 × 7 = 42	7 × 6 = 42
42 ÷ 6 = 7	42 ÷ 7 = 6

Let's Reflect

It's reflection time!