

Name _____

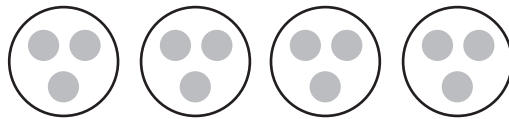
Count Equal Groups

Equal groups have the same number in each group.

There are 3 tulips in each of 4 vases. How many tulips are there in all?

Step 1 Think: there are 4 vases, so draw 4 circles to show 4 equal groups.

Step 2 Think: there are 3 tulips in each vase, so draw 3 dots in each group.



Step 3 Skip count by 3s to find how many in all: 3, 6, 9, 12

There are 4 equal groups with 3 tulips in each group.

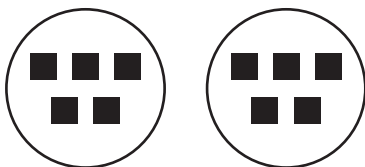
So, there are 12 tulips in all.

1. Draw 3 groups of 5. Skip count to find how many.

_____ in all

Count equal groups to find how many.

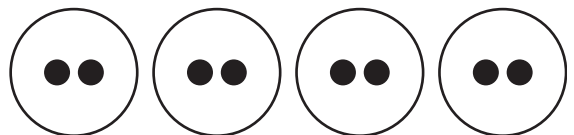
2.



_____ groups of _____

_____ in all

3.



_____ groups of _____

_____ in all

Name _____

Clues and Equal Groups

Read each problem. Look for a clue that tells about the number of groups. Draw equal groups to model the problem. Then solve.

1. Jan walks 4 miles each week for one month. How many miles does she walk altogether?

2. Brett signed up for 2 tennis lessons each month from January through May. How many lessons did he sign up for in all?

3. Miriam practices playing the clarinet for 2 hours every day. How many hours does she practice the clarinet each week?

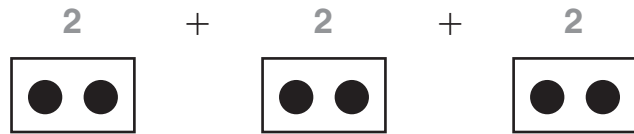
4.  Choose one of the problems. **Explain** how your drawing shows equal groups.

Name _____

Algebra • Relate Addition and Multiplication

You can add to find how many in all.

You can also multiply to find how many in all when you have equal groups.

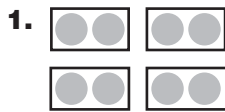


$$3 \times 2 = 6$$

The **factors** are 3 and 2.
The **product** is 6.

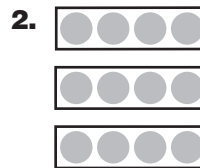
So, $2 + 2 + 2 = 6$ and $3 \times 2 = 6$.

Write related addition and multiplication sentences for the model.



$$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

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



$$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

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

Draw a quick picture to show the equal groups. Then write related addition and multiplication sentences.

3. 4 groups of 3

$$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

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

4. 2 groups of 3

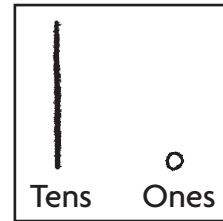
$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

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

Name _____

Model Groups

Draw a quick picture to show equal groups. Then write related addition and multiplication sentences.



1. 3 groups of 4

2. 2 groups of 11

3. 4 groups of 15

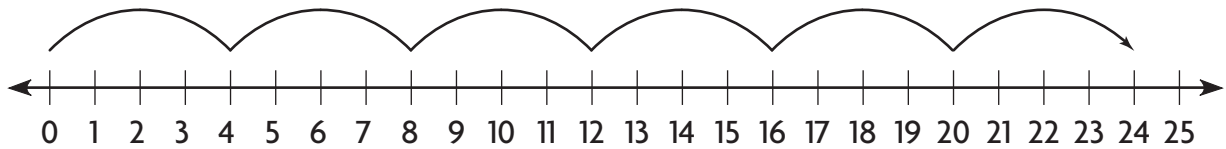
4. 3 groups of 12

5. **Write Math** Dalton is baking pepperoni pizza. He uses 11 pepperonis for every pizza. How many pizzas did he make if he used 55 pepperonis? **Explain.**

Name _____

Skip Count on a Number Line

When you have **equal groups**, you can skip count on a number line to find how many in all.



How many jumps are there? **6**

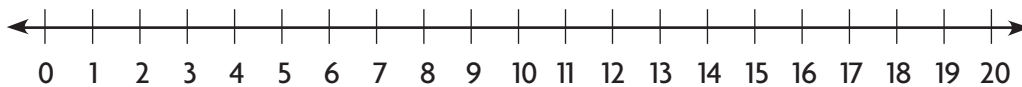
How long is each jump? **4 spaces**

Think: 6 jumps of 4 shows 6 groups of 4.

Multiply. 6×4

$$6 \times 4 = 24$$

1. Skip count by drawing jumps on the number line.
Find how many in 4 jumps of 4. Then write the product.



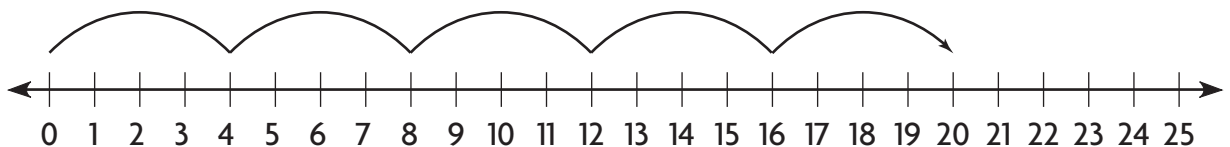
$$4 \times 4 = \underline{\quad}$$

2. Draw jumps on the number line to show 6 groups of 3.
Then find the product.



$$6 \times 3 = \underline{\quad}$$

3. Write the multiplication sentence the number line shows.



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

Name _____

Skip Counting

Label and draw jumps on the number line to count equal groups. Record how to skip count to solve.

1. How many fingers are there on 4 hands?

There are _____ fingers on 4 hands.



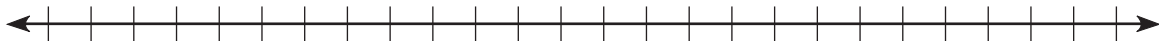
2. How many legs are there on 3 horses?

There are _____ legs on 3 horses.



3. How many wheels are there on 6 cars?

There are _____ wheels on 6 cars.



4. **Stretch Your Thinking** Write your own problem like the ones on this page. Trade with a classmate. Then solve.

Name _____

Problem Solving • Model Multiplication

There are 2 rows of flute players in a marching band. Each row has 7 students. How many flute players are there in all?

Read the Problem	Solve the Problem
What do I need to find? I need to find how many <u>flute players</u> are in the marching band.	Complete the bar model to show the flute players. Write 7 in each box to show the 7 students in each of the 2 groups. 7 7 <u>14</u> students
What information do I need to use? I know there are <u>2</u> rows. There are <u>7</u> students in each row.	Since there are equal groups, I can multiply to find the number of flute players in the band. <u>2</u> × <u>7</u> = <u>14</u>
How will I use the information? I will draw a <u>bar model</u> to help me see what <u>operation</u> I need to use to solve the problem.	So, there are <u>14</u> flute players in all.

- The Coopers put a new floor in the bathroom. There are 5 rows of 6 red tiles. How many tiles did they use?
- Tommy has a jar of coins. He makes 8 piles of 4 quarters. How many quarters does Tommy have in all?

Name _____

Solve Problems with Bar Models

Use this information for 1–3.

On Monday, 4 students from Ms. Lee's class each checked out 3 books from the library. Then 2 students from Ms. Reeves' class each checked out 5 books.

1. Draw a bar model to show the number of books checked out by each student in each class.

2. On Monday, how many books were checked out of the library by these students?

3. On Tuesday, 3 other students from Ms. Lee's class went to the library and checked out 3 books each. How many students in all from Ms. Lee's class checked out books on Monday and Tuesday?

Use this information for 4–6.

Jason planted 8 tomato plants. Then he planted 3 groups of 8 squash plants.

4. Draw a bar model to show how many tomato plants and squash plants Jason planted.

5. How many tomato and squash plants did Jason plant in all?

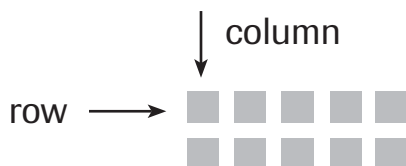
6. How many more squash plants than tomato plants did Jason plant?

7.  Use the given information for 1–3 to write a problem. Then solve your problem.

Model with Arrays

An **array** is a set of objects arranged in rows and columns.

Write a multiplication sentence for each array.



This array has **2** rows and **5** columns.

Count by fives.

2 rows of 5 are 10.

The multiplication sentence is
 $2 \times 5 = 10$.



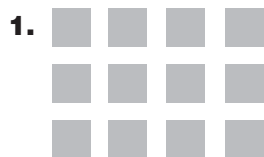
This array has **5** rows and **2** columns.

Count by twos.

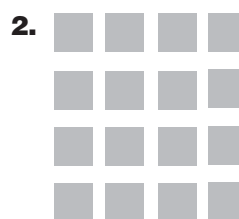
5 rows of 2 are 10.

The multiplication sentence is
 $5 \times 2 = 10$.

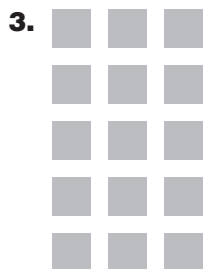
Write a multiplication sentence for the array.



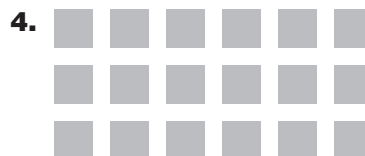
____ $\times$ ____ = ____



____ $\times$ ____ = ____



____ $\times$ ____ = ____

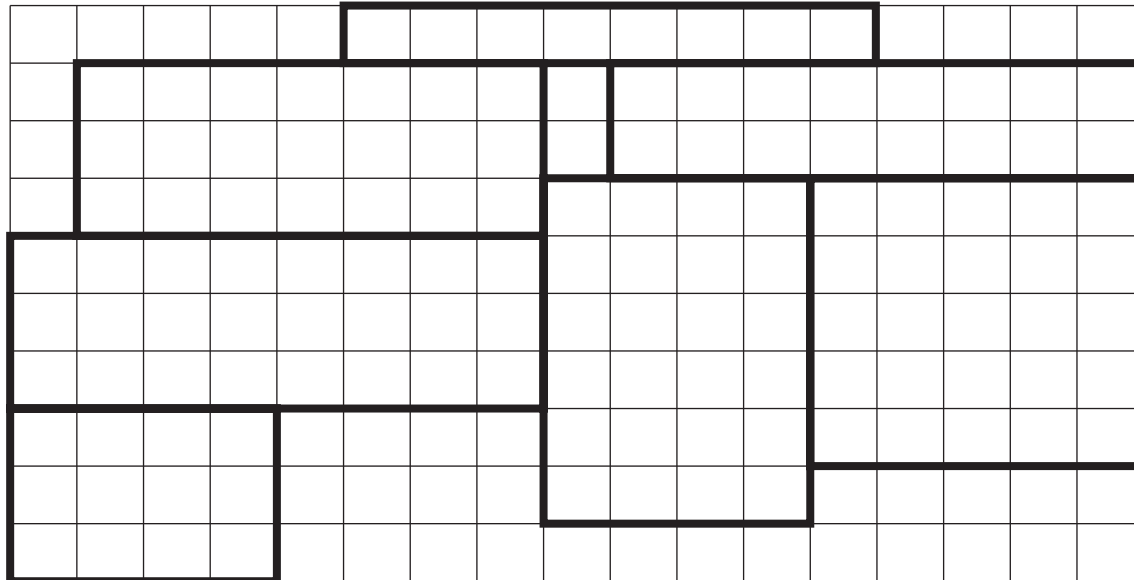


____ $\times$ ____ = ____

Garden Arrays

Ed's Garden Nursery is displaying new flowers. Each type of flower is arranged in an array. Use the clues to label each part of the flower display. Then find the number of each type of flower. Color the display.

1. Yellow mums 2×8 array = _____ mums
2. Purple pansies 6×4 array = _____ pansies
3. Pink begonias 5×5 array = _____ begonias
4. Orange marigolds 3×7 array = _____ marigolds
5. White petunias 3×4 array = _____ petunias
6. Blue tulips 3×8 array = _____ tulips



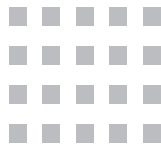
7. Add a 2×5 array for a red rose garden. Label it and color it red.
8. **Write Math** **Explain** how you decided where each type of flower belonged.

Name _____

Algebra • Commutative Property of Multiplication

The **Commutative Property of Multiplication** states that you can change the order of the factors and the product stays the same.

There are 4 rows of 5 tiles.

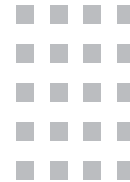


Think: 4 equal groups of 5

$$5 + 5 + 5 + 5 = 20$$

Multiply. $4 \times 5 = 20$

There are 5 rows of 4 tiles.



Think: 5 equal groups of 4

$$4 + 4 + 4 + 4 + 4 = 20$$

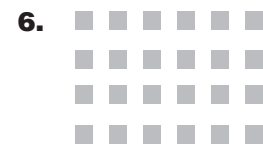
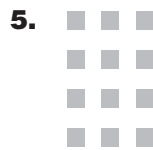
Multiply. $5 \times 4 = 20$

The factors are 4 and 5. The product is 20.

Write a multiplication sentence for the array.



Write a multiplication sentence for the model. Then use the **Commutative Property of Multiplication** to write a related multiplication sentence.



____ $\times$ ____ = ____

____ $\times$ ____ = ____

____ $\times$ ____ = ____

____ $\times$ ____ = ____

____ $\times$ ____ = ____

____ $\times$ ____ = ____

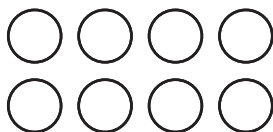
Multiplication by Arrangement

Solve.

1. Sara made an array with 10 tiles. The array had 2 rows. How many tiles were in each row?

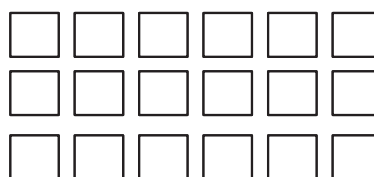
2. Kelly put 15 jars of spices in the cabinet. There were 5 jars in each row. How many rows did Kelly make?

3. Leslie wants to display 12 seashells in equal rows. She starts to draw this array.



What are two ways Leslie can complete the array?

4. This array shows how José displays the 18 rocks in his collection.



What are three other ways José can display his rocks in equal rows?

5.  Mark arranges cans in 8 rows with 3 cans in each row. Using the same total number of cans, how many different ways can Mark make equal rows of cans? List the ways.

Name _____

Algebra • Multiply with 1 and 0

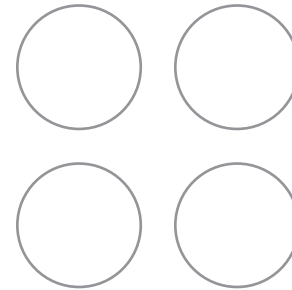
Find the product.

$$4 \times 0 = \blacksquare$$

Model 4×0 .

Each circle contains 0 counters.

$$4 \text{ circles} \times 0 \text{ counters} = 0 \text{ counters}$$



Zero Property of Multiplication

The product of zero and any number is zero.

$$\text{So, } 4 \times 0 = 0 \text{ and } 0 \times 4 = 0.$$

Find the product.

$$6 \times 1 = \blacksquare$$

Model 6×1 .

Each circle contains 1 star.

$$6 \text{ circles} \times 1 \text{ star} = 6 \text{ stars}$$



Identity Property of Multiplication

The product of any number and 1 is that number.

$$\text{So, } 6 \times 1 = 6 \text{ and } 1 \times 6 = 6.$$

Find the product.

$$1. \ 9 \times 0 = \underline{\hspace{2cm}} \quad 2. \ 1 \times 5 = \underline{\hspace{2cm}} \quad 3. \ 0 \times 10 = \underline{\hspace{2cm}} \quad 4. \ 8 \times 1 = \underline{\hspace{2cm}}$$

$$5. \ 0 \times 3 = \underline{\hspace{2cm}} \quad 6. \ 7 \times 1 = \underline{\hspace{2cm}} \quad 7. \ 5 \times 0 = \underline{\hspace{2cm}} \quad 8. \ 1 \times 2 = \underline{\hspace{2cm}}$$

Name _____

Three in a Row

Find three facts in a row, column, or diagonally that have the same product. Circle the facts and write the product.

1.

6×1	1×3	3×0
1×0	2×3	0×2
2×6	2×1	1×6

Product = _____

2.

5×4	1×5	4×5
1×20	5×0	4×2
4×5	2×5	1×0

Product = _____

3.

4×2	6×1	3×2
2×4	8×1	1×8
2×6	4×6	0×6

Product = _____

4.

10×2	4×9	10×0
4×10	5×10	9×0
4×0	2×10	0×5

Product = _____

5.

1×10	5×10	5×2
10×0	2×5	1×5
10×1	2×10	2×1

Product = _____

6.

0×16	8×1	2×4
4×8	1×8	8×4
1×16	4×4	8×2

Product = _____

7. **Stretch Your Thinking** How are adding 0 and multiplying by 1 alike?
