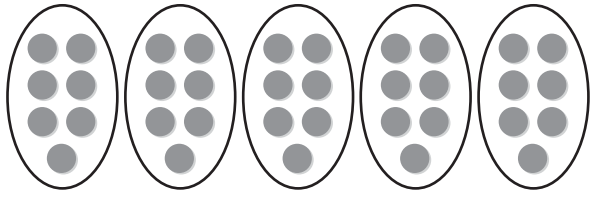
Name _____

Problem Solving • Model Division

There are 35 people going to the amusement park. They will all travel in 5 vans with the same number of people in each van. How many people will travel in each van?

Read the Problem	Solve the Problem
What do I need to find? I need to find the number of people who will travel in each van.	**Describe how to act out the problem to solve.** **Step 1** Start with 35 counters. **Step 2** Make 5 equal groups. Place 1 counter at a time in each group until all 35 counters are used. **Step 3** Count the number of counters in each group. 7  So, 7 people will travel in each van.
What information do I need to use? There are 35 people. 5 vans are taking all the people to the amusement park.	
How will I use the information? I can act out the problem by making equal groups with counters.	

1. José packs 54 CDs into small boxes. Each box holds 9 CDs. How many boxes does José pack to hold all 54 CDs?

2. Mary volunteers at the library. She has 36 books to put on 4 empty shelves. If Mary puts an equal number of books on each shelf, how many books will be on each shelf?

Name _____

Modeling Problems

Model the problem to solve.

1. Gina needs to make 4 centerpieces with the same number of flowers in each centerpiece for the tables at her party. She bought 32 flowers to use. How many flowers will be in each centerpiece?

_____

2. Gina bought 18 balloons. If she makes 3 equal groups of balloons, how many balloons will be in each group?

_____

3. Gina bought 24 plates. If she stacks them in groups of 8, how many stacks of plates will she make?

_____

4. There will be a total of 20 people at the party. There are 4 tables. If Gina wants an equal number of people at each table, how many chairs should she set at each table?

_____

5. **Stretch Your Thinking** Find three more ways Gina could stack 24 plates into equal stacks, with at least 3 plates in a stack. Tell the number of stacks and how many would be in each stack.

_____

_____

Name _____

Size of Equal Groups

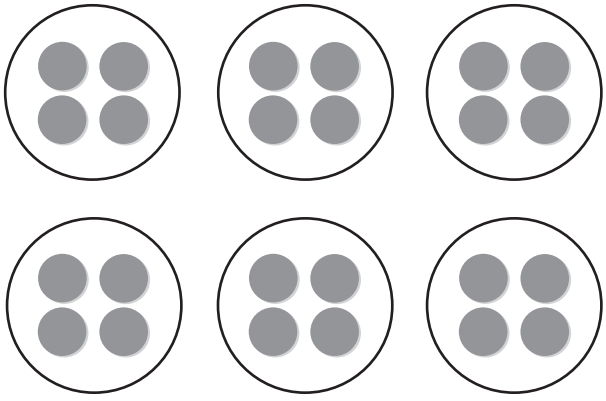
When you **divide**, you separate into equal groups.

Use counters or draw a quick picture. Make equal groups. Complete the table.

Counters	Number of Equal Groups	Number in Each Group
24	6	■

The number in each group is unknown, so divide.

Place 1 counter at a time in each group until all 24 counters are used.



There are 4 counters in each of 6 groups.

Use counters or draw a quick picture. Make equal groups. Complete the table.

	Counters	Number of Equal Groups	Number in Each Group
1.	12	2	
2.	10	5	
3.	16	4	
4.	24	3	
5.	15	5	

Name _____

Matching Models

Draw a line to match each word problem with the model you can use to solve it. Then write the answer.

1. Sean has 15 baseball cards. He puts them into equal groups. How many baseball cards does Sean put in each group?

_____

2. Lucy has a box of 24 cookies. She divides them equally among some friends. How many cookies does each friend receive?

_____

3. Eddie has 56 coins in his collection. He separates the coins into equal groups. How many coins are in each group?

_____

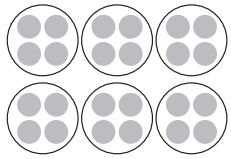
4. Michael bought 54 juice boxes for a picnic. He plans to put an equal number at each of the picnic tables. How many juice boxes will Michael put at each table?

_____

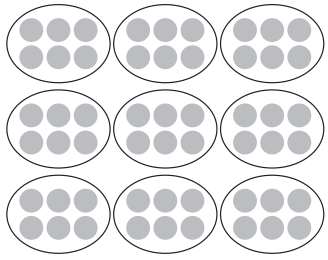
5. Leona has 27 feathers to put on some masks. She uses the same number of feathers on each mask. How many feathers does she use on each mask?

_____

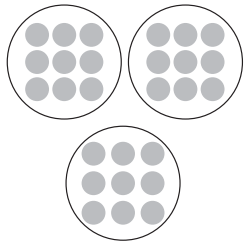
A



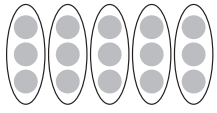
B



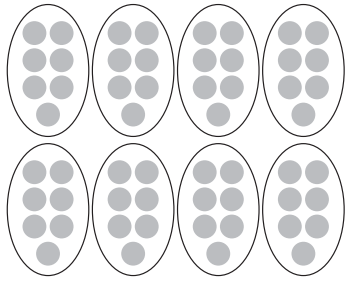
C



D



E



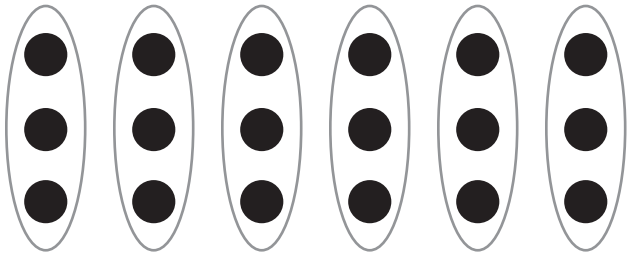
Name _____

Number of Equal Groups

Complete the table. Use counters to help find the number of equal groups.

Counters	Number of Equal Groups	Number in Each Group
18	■	3

The number of equal groups is unknown, so divide.
Circle groups of 3 counters until all 18 counters are in a group.



There are 6 groups of 3 counters each.

Draw counters. Then circle equal groups. Complete the table.

	Counters	Number of Equal Groups	Number in Each Group
1.	24		4
2.	20		5
3.	21		7
4.	36		4

Name _____

Eggs in One Basket

For each of the following recipes, tell how many batches can be made using 24 eggs. Draw a quick picture with counters to solve each problem.

1. A custard recipe calls for 8 eggs.

2. An omelet recipe calls for 3 eggs.

3. A muffin recipe calls for 2 eggs.

4. A French toast recipe calls for 12 eggs.

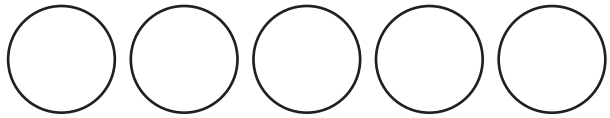
5. **Stretch Your Thinking** If one batch of cookies calls for 5 eggs, how many batches can you make with 24 eggs? Will there be any eggs left over? **Explain**.

Name _____

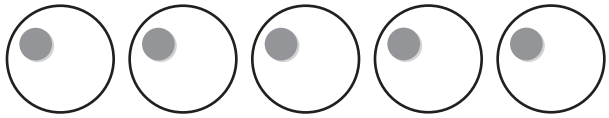
Model with Bar Models

Use counters to find 15 ÷ 5.

Step 1 Use 15 counters. Draw 5 circles to show the number of equal groups.



Step 2 Place 1 counter at a time in each circle.



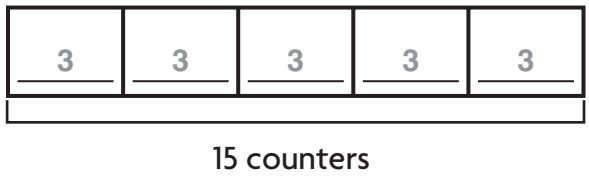
Step 3 Continue until you have placed all 15 counters.

Step 4 Count the number of counters in each circle.

There are 3 counters in each of the 5 groups.

You can use a bar model to show how the parts of a problem are related.

- There are 15 counters.
- There are 5 equal groups.
- There are 3 counters in each group.

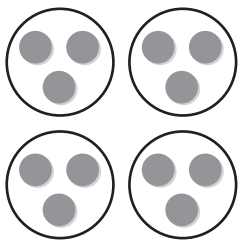


Write a division equation for the model.

15 ÷ 5 = 3

Write a division equation for the picture.

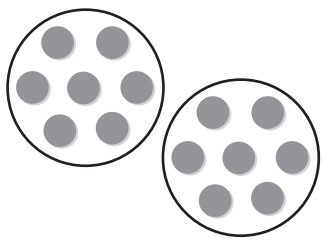
1.



_____

_____

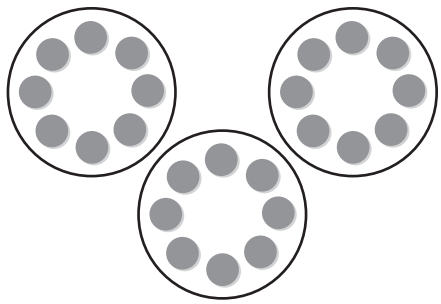
2.



_____

_____

3.



_____

_____

Name _____

Speedy Math

Solve each problem. For each exercise, the quotient has a matching letter. Place the letter above the exercise number to find the answer to the question.

1. $20 \div 5 =$ _____

2. $42 \div 7 =$ _____

3. $25 \div 5 =$ _____

4. $45 \div 9 =$ _____

5. $36 \div 4 =$ _____

6. $12 \div 6 =$ _____

7. $48 \div 8 =$ _____

What is the fastest animal on land?

KEY	A	B	C	E	H	I	R	T
	2	3	4	5	6	7	8	9

_____	_____	_____	_____	_____	_____	_____
1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**

8. Stretch Your Thinking Make up your own division exercises and puzzle to answer the question “What insect is the loudest? The answer is a "cicada".

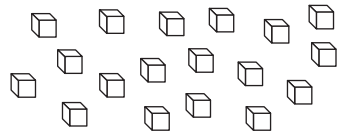
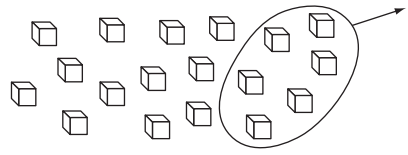
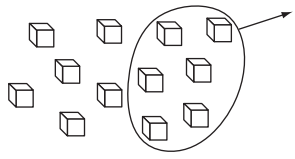
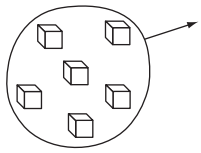
_____

_____

_____

Algebra • Relate Subtraction and Division

Find 18 ÷ 6.

	Use base-ten blocks.	Use repeated subtraction.
Step 1 Start with the number you are dividing, 18.		
Step 2 Subtract the number you are dividing by, 6.		18 − 6 12
Step 3 There are more than 6 left. Subtract 6 again.		18 − 6 = 12; 12 − 6 = 6
Step 4 There are 6 left. Subtract 6 again.		18 − 6 = 12; 12 − 6 = 6; 6 − 6 = 0

Step 5 Count the number of times you subtract 6.

You subtract 6 three times, so there are **3** groups of 6 in 18.

Write: 18 ÷ 6 = **3**

Write a division equation.

1. 27 − 9 = 18; 18 − 9 = 9; 9 − 9 = 0

_____

2. 16 − 4 = 12; 12 − 4 = 8; 8 − 4 = 4; 4 − 4 = 0

_____

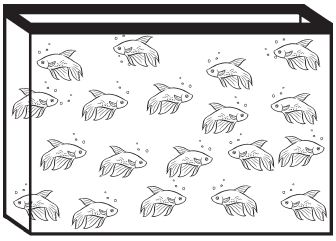
Name _____

Fish Tank Math

Jed works in a pet store that sells fish. He needs to move fish from the old tanks and put them in the new tanks. He can move the fish in small groups only.

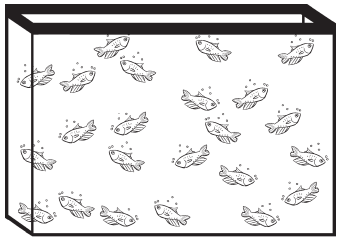
Use repeated subtraction to solve each problem. Circle groups of fish each time you subtract. Then write how many equal groups Jed can make and how many fish are left over.

1. 19 ÷ 6



____ groups and ____ left over

2. 23 ÷ 5

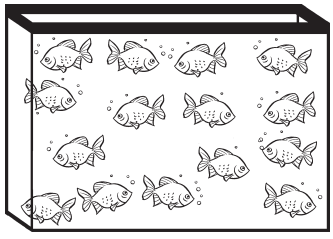


____ groups and ____ left over

3. 17 ÷ 3

____ groups and ____ left over

4. 15 ÷ 4



____ groups and ____ left over

5. **Stretch Your Thinking** Choose one of the problems. Change the number of fish in each group so there will not be any fish left over. **Explain** why you chose that tank.

_____

_____

_____

_____

Name _____

Model with Arrays

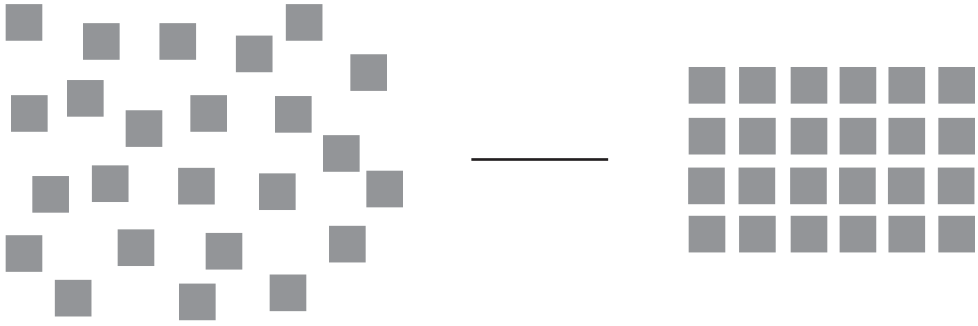
You can use arrays to model division.

How many rows of 6 tiles each can you make with 24 tiles?

Use square tiles to make an array. Solve.

Step 1 Use 24 tiles.

Step 2 Make as many rows of 6 as you can.



You can make 4 rows of 6.

So, there are 4 rows of 6 tiles in 24.

Use square tiles to make an array. Solve.

1. How many rows of 7 are in 28?

_____

2. How many rows of 5 are in 15?

_____

Make an array. Then write a division equation.

3. 18 tiles in 3 rows

_____

4. 20 tiles in 4 rows

_____

5. 14 tiles in 2 rows

_____

6. 36 tiles in 4 rows

_____

Name _____

Array Puzzles

Use the clues to help solve the puzzle. You can use tiles or draw the array on a separate sheet of paper.

1. I am an array made with 24 tiles. I have 8 tiles in each row. How many rows do I have?

_____

2. I am an array with 4 equal rows. I have 16 tiles in all. How many tiles are in each of my rows?

_____

3. I am a square-shaped array. I have 7 rows. How many tiles do I have in all? (Hint: A square has 4 sides of equal length.)

_____

4. I am an array made with 24 tiles. My number of rows is 2 more than the number of tiles in each of my rows. How many rows do I have?

_____

5. I am an array with 7 tiles in each row. My number of rows is 4 less than the number of tiles in each of my rows. How many tiles am I made with in all?

_____

6. I am an array made with 40 tiles. I have an odd number of rows and an even number of tiles in each of my rows. The number of my rows plus the number of tiles in each of my rows equals 13. How many rows do I have?

_____

7. Write Math Write your own array puzzle. Include the answer.

_____

_____

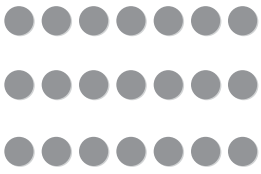
_____

Name _____

Algebra • Relate Multiplication and Division

You can use an array to complete 21 ÷ 3 = _____.

Use 21 counters.
Make 3 equal rows.



There are 7 counters in each row.

3 rows of 7 = 21

So, 21 ÷ 3 = 7

The 21 tells the total number of counters in the array.
The 3 stands for the number of equal rows.
The 7 stands for the number of counters in each row.

You can use a related multiplication fact to check your answer.

21 ÷ 3 = 7 $3 \times 7 = 21$

So, 3 rows of 7 represents 21 ÷ 3 = 7 or 3 × 7 = 21.

Complete.

1.

6 rows of _____ = 24

6 × _____ = 24

24 ÷ 6 = _____

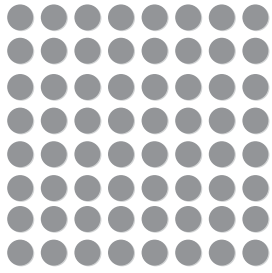
2.

3 rows of _____ = 27

3 × _____ = 27

27 ÷ 3 = _____

3.



8 rows of _____ = 64

8 × _____ = 64

64 ÷ 8 = _____

Complete the equations.

4. 6 × _____ = 42 42 ÷ _____ = 6

5. 9 × _____ = 54 54 ÷ _____ = 9

Name _____

Multiplication and Division Match

Solve. Then draw a line to match each multiplication equation to a related division equation.

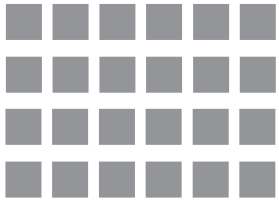
1.	$2 \times 8 =$ _____ •	**A**	$12 \div 2 = 6$
2.	$5 \times 8 =$ _____ •	**B**	$42 \div 7 = 6$
3.	$3 \times 9 =$ _____ •	**C**	$18 \div 3 = 6$
4.	$6 \times 7 =$ _____ •	**D**	$40 \div 8 = 5$
5.	$2 \times 6 =$ _____ •	**E**	$24 \div 6 = 4$
6.	$5 \times 7 =$ _____ •	**F**	$27 \div 9 = 3$
7.	$6 \times 4 =$ _____ •	**G**	$24 \div 3 = 8$
8.	$8 \times 8 =$ _____ •	**H**	$36 \div 9 = 4$
9.	$3 \times 6 =$ _____ •	**I**	$16 \div 2 = 8$
10.	$9 \times 4 =$ _____ •	**J**	$18 \div 2 = 9$
11.	$9 \times 2 =$ _____ •	**K**	$64 \div 8 = 8$
12.	$8 \times 3 =$ _____ •	**L**	$35 \div 5 = 7$

Name _____

Algebra • Write Related Facts

Related facts are a set of related multiplication and division equations.

Write the related facts for the array.



There are 4 equal rows of tiles.
There are 6 tiles in each row.
There are 24 tiles.
Write 2 multiplication equations and 2 division equations for the array.

factor × factor = product	dividend ÷ divisor = quotient
4 × 6 = 24	24 ÷ 4 = 6
6 × 4 = 24	24 ÷ 6 = 4

The equations show how the numbers 4, 6, and 24 are related.

So, the related facts are 4 × 6 = 24, 6 × 4 = 24, 24 ÷ 4 = 6, and 24 ÷ 6 = 4.

Write the related facts for the array.

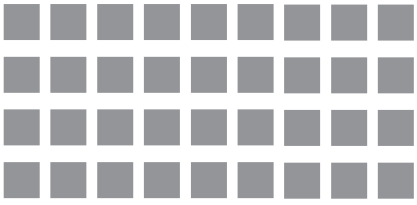
1.

_____ _____
_____ _____

2.

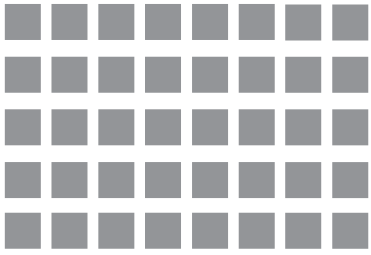
_____ _____
_____ _____

3.



_____ _____
_____ _____

4.



_____ _____
_____ _____

Name _____

Related Fact Riddles

Write a division equation to match each description. Then, write the related facts.

Remember the following vocabulary terms: ***dividend*** ÷ ***divisor*** = ***quotient***.

1. Seven is the quotient. The dividend is a multiple of 3 that is less than 30.

_____

_____

2. The quotient is 7 less than the divisor. The dividend is 18.

_____

_____

3. This set of related facts contains two numbers less than 10. One of these numbers is the product of 3 and 3. When you multiply the two numbers, the product is a multiple of 5. Write the related facts.

_____

_____

4. The quotient and the divisor are the same number. Their sum is 8. Write the related facts.

_____

_____

5. Write Math How many equations did you write for Exercise 4? How do you know your answer is correct?

_____

_____

6. **Stretch Your Thinking** Write a riddle for a division equation. Then write the related facts.

_____

_____

_____

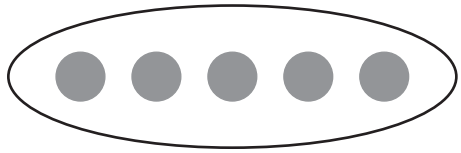
Name _____

Algebra • Division Rules for 1 and 0

Division rules can help you understand how to divide with 1 and 0.

Rule A: Any number divided by 1 equals that number.

$5 \div 1 = 5$ or $1\overline{)5}$ → quotient 5



One group of 5

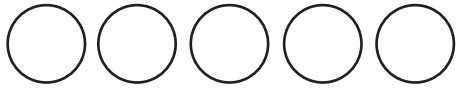
Rule B: Any number (except 0) divided by itself equals 1.

$5 \div 5 = 1$ or $5\overline{)5}$ → quotient 1

Five groups of 1

Rule C: Zero divided by any number (except 0) equals 0.

$0 \div 5 = 0$ or $5\overline{)0}$ → quotient 0



Five groups of 0

Rule D: You cannot divide by 0.

Find the quotient.

1. $4 \div 1 =$ ____ **2.** $2 \div 2 =$ ____ **3.** $8 \div 1 =$ ____ **4.** $7 \div 7 =$ ____

5. $0 \div 8 =$ ____ **6.** $0 \div 9 =$ ____ **7.** $4 \div 4 =$ ____ **8.** $6 \div 1 =$ ____

9. $6 \div 6 =$ ____ **10.** $0 \div 4 =$ ____ **11.** $0 \div 2 =$ ____ **12.** $3 \div 1 =$ ____

Name _____

A Planet of 1 and 0

Fill in the quotient in the first blank. Then, fill in the other blank with the word that makes the most sense from the box below. Each word may be used only once. Some words will not be used.

planets	kite	letter
states		
rock	cities	

1. On the Earth's surface, there are _____ (3 ÷ 1) basic types of _____.

2. The number _____ (0 ÷ 4) looks like the _____ O.

3. The names of _____ (4 ÷ 1) of the _____ in the United States start with I.

4. In our solar system, _____ (2 ÷ 1) of the _____, Mercury and Venus, have no moons.

5. **Stretch Your Thinking** If 0 ÷ 4 in Exercise 2 was written as 4 ÷ 0, could it be solved? **Explain**.

_____

_____

6. Write Math Write a fill-in story like the exercises above, using a rule for 1 or 0. Use one of the words left in the box.

_____

_____

_____