

Name _____

Operations and Algebraic Thinking
3.OA.2, 3.OA.4

CCSS

MY Homework

Lesson 1

Hands On: Model Division

Homework Helper



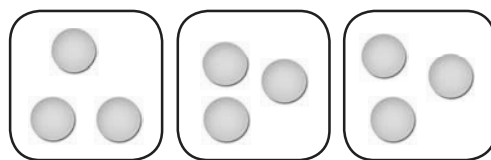
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Divide 9 counters into 3 equal groups.
Find how many counters are in each group.

Partition 9 counters, one counter at a time, until all the counters are gone.

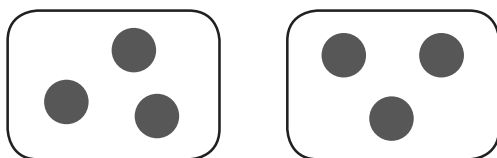
9 counters were divided into 3 groups.
There are 3 counters in each group.

The division sentence is $9 \div 3 = 3$.



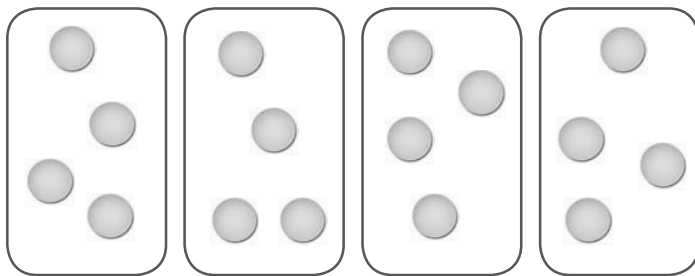
Practice

1. Partition 6 counters, one at a time, to find the number of counters in each group. Draw the counters.



6 counters were divided into 2 groups; $6 \div 2 =$ 3 counters in each group.

2. Circle each group of 4 to find the number of equal groups.



16 counters were divided into groups of 4; $16 \div 4 =$ 4 groups.




Problem Solving

Draw a model to solve. Then write a number sentence.

3. Nola has 16 bracelets. She hangs an equal number of bracelets on 2 hooks. How many bracelets are on each hook?

$16 \div 2 = 8$; 8 bracelets

4. **Mathematical PRACTICE**  **Model Math** Noah rolled 18 large snowballs to make snowmen. He used 3 snowballs for each snowman. How many snowmen did Noah make?

$18 \div 3 = 6$; 6 snowmen

5. There are 8 mittens drying on the heater. Each student has 2 mittens. How many students have mittens drying on the heater?

$8 \div 2 = 4$; 4 students

My Drawing!

3. Students should draw 2 groups of 8 bracelets.

4. Students should draw 6 groups of 3 snowballs.

5. Students should draw 4 groups of 2 mittens

Vocabulary Check



Draw a line to connect each vocabulary word with its definition.

- | | |
|----------------------|--|
| 6. division sentence | • sharing objects one at a time until there are none left |
| 7. division | • a number sentence that shows the number of equal groups and the number in each group |
| 8. partition | • groups that have the same quantity of objects or have the same value |
| 9. equal groups | • an operation that tells the number of equal groups and the number in each group |

Name _____

Operations and Algebraic Thinking
3.OA.2, 3.OA.4

CCSS

MY Homework

Lesson 2

Division as Equal Sharing

Homework Helper

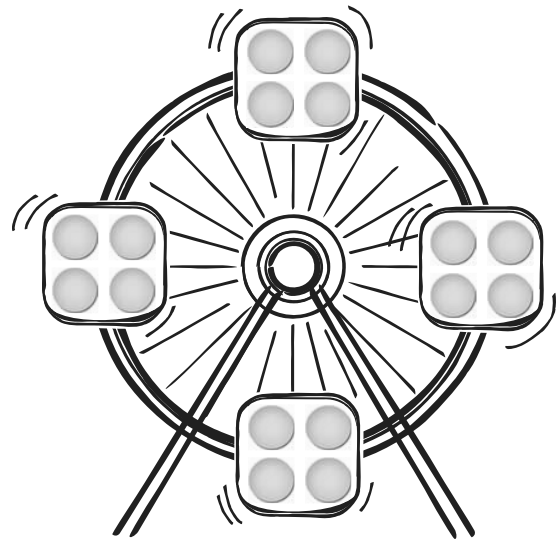


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**There are 16 people on a ride at the fair.
They are divided evenly among 4 carts.
How many people are in each cart?**

Use counters to solve the problem.

- 1** Start with 16 counters to represent the 16 people.
- 2** Divide the counters evenly among the carts.
- 3** 16 riders divided equally among 4 carts is 4 riders per cart.



So, $16 \div 4 = 4$.

Practice

Use counters to find how many are in each group.

- 1.** 21 counters
7 equal groups
 3 in each group
 $21 \div 7 = \underline{3}$

- 2.** 16 counters
2 equal groups
 8 in each group
 $16 \div 2 = \underline{8}$

- 3.** 18 counters
3 equal groups
 6 in each group
 $18 \div 3 = \underline{6}$

- 4.** 30 counters
6 equal groups
 5 in each group
 $30 \div 6 = \underline{5}$

Use counters to find the number of equal groups.

5. 24 counters

8 equal groups

3 in each group

$$24 \div \underline{8} = 3$$

6. 24 counters

4 equal groups

6 in each group

$$24 \div \underline{4} = 6$$




Problem Solving

Draw a picture to solve. Then write a division sentence.

7. Four friends want to share 8 apples equally.
How many apples will each person get?

2 apples; $8 \div 4 = 2$

8. **PRACTICE**  **Model Math** Sarah has 32 crackers. She eats 2 and throws away 2 that she dropped. Sarah puts the rest of the crackers into 4 equal groups. How many crackers are in each group?

7 crackers; $28 \div 4 = 7$

My Drawing!

7. Students should draw four groups with 2 in each.

8. Students should draw 4 groups with 7 in each.

Vocabulary Check



Draw an example or write a definition beneath each vocabulary word. Sample answers given.

9. array



10. divide

to separate
into equal
groups

11. division sentence

$$18 \div 9 = 2$$

Test Practice

12. There are 25 students in Mr. Copa's class. He divides the students into equal groups of 5. How many students are in each group?

- ☒ A 5 students ☐ C 15 students
☐ B 10 students ☐ D 20 students

MY Homework

Lesson 3

Relate Division and Subtraction

Homework Helper

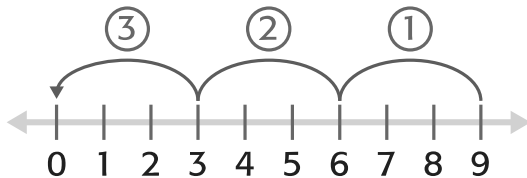


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Perry divides 9 berries evenly among 3 fruit cups. How many berries does Perry put in each cup? Write a division sentence with a symbol for the unknown. Solve.

$$9 \div 3 = \square \leftarrow \text{unknown}$$

One Way Use a number line.



Subtract equal groups of 3 until you reach 0. There are 3 groups.

So, $9 \div 3 = 3$.

Another Way Use repeated subtraction.

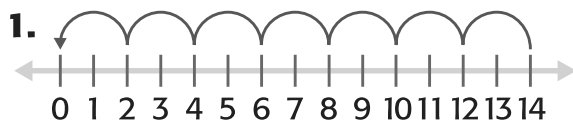
$$\begin{array}{r} \textcircled{1} \\ 9 \\ - 3 \\ \hline 6 \end{array} \quad \begin{array}{r} \textcircled{2} \\ 6 \\ - 3 \\ \hline 3 \end{array} \quad \begin{array}{r} \textcircled{3} \\ 3 \\ - 3 \\ \hline 0 \end{array}$$

Keep subtracting 3 until you reach 0. You subtracted 3 groups.

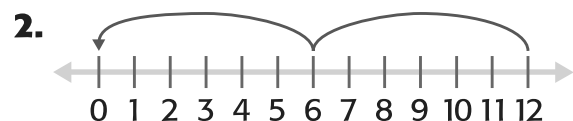
So, $9 \div 3 = 3$.

Practice

Use repeated subtraction to divide.



$$14 \div 2 = \underline{7}$$



$$12 \div 6 = \underline{2}$$

3. $28 \div 7 = \underline{4}$

$$\begin{array}{r} 28 \\ - 7 \\ \hline 21 \end{array} \quad \begin{array}{r} 21 \\ - 7 \\ \hline 14 \end{array} \quad \begin{array}{r} 14 \\ - 7 \\ \hline 7 \end{array} \quad \begin{array}{r} 7 \\ - 7 \\ \hline 0 \end{array}$$

4. $30 \div 10 = \underline{3}$

$$\begin{array}{r} 30 \\ - 10 \\ \hline 20 \end{array} \quad \begin{array}{r} 20 \\ - 10 \\ \hline 10 \end{array} \quad \begin{array}{r} 10 \\ - 10 \\ \hline 0 \end{array}$$



Problem Solving

Algebra Write a division sentence with a symbol for the unknown. Then solve.

5. There are 24 juice bottles, with 6 bottles in each package. How many packages of juice bottles are there?

$24 \div 6 = \blacksquare$; 4 packages

6. A mechanic equally divides 4 hours of his time to repair 8 cars. How many cars does he repair in one hour?

$8 \div 4 = \blacksquare$; 2 cars

7. On Monday, Helen's math teacher gave the class 45 problems to finish by Friday. Helen will do the same number of problems each day. How many problems will she do on Friday?

$45 \div 5 = \blacksquare$; 9 problems

Vocabulary Check



Choose the correct word(s) to complete each sentence.

number line repeated subtraction

8. Skip count backwards on a number line to divide.
9. Use repeated subtraction to subtract equal groups repeatedly until you reach zero.

Test Practice

10. Sal made 6 cups of oatmeal for himself and his 2 brothers. Each received an equal number of cups of oatmeal. Which number sentence represents this problem?

- (A) $6 - 2 = 4$ (C) $6 \times 2 = 12$
(B) $6 \div 3 = 2$ (D) $6 - 3 = 3$

Name _____

Operations and Algebraic Thinking
3.OA.4, 3.OA.6, 3.OA.7

CCSS

MY Homework

Lesson 4

Hands On: Relate Division and Multiplication

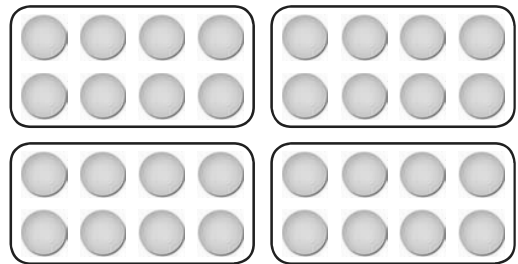
Homework Helper



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Find $32 \div 4$.

- 1 Model 32 counters divided into 4 equal groups. There are 8 counters in each group.



- 2 Write a division sentence.

$$\begin{array}{ccccc} 32 & \div & 4 & = & 8 \\ \uparrow & & \uparrow & & \uparrow \\ \text{dividend} & & \text{divisor} & & \text{quotient} \end{array}$$

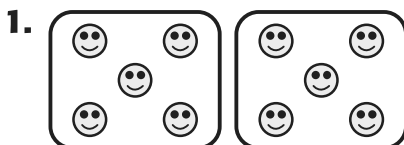
- 3 Write a multiplication sentence.

$$\begin{array}{ccccc} 4 & \times & 8 & = & 32 \\ \uparrow & & \uparrow & & \uparrow \\ \text{number of groups} & & \text{number in each group} & & \text{number in all} \end{array}$$

So, $32 \div 4 = 8$.

Practice

Write a related division and multiplication sentence for each.



$10 \div 2 = 5; 2 \times 5 = 10$



$27 \div 3 = 9; 3 \times 9 = 27$




Problem Solving

Draw a model to solve. Then write a division sentence.

3. 42 students need to divide equally into 7 vans going to the museum. How many students will be in each van?

$$42 \div 7 = 6$$

4. **PRACTICE**  **Model Math** Carla is giving out pencils to 30 students. The students are divided equally among 6 tables. How many pencils will Carla leave at each table?

$$30 \div 6 = 5$$

5. Mr. Rina has 7 glass figures. He will use 1 box to mail each glass figure to a customer. How many boxes does Mr. Rina need?

$$7 \div 1 = 7$$

My Drawing!

3. Students should draw 7 groups of 6.

4. Students should draw 6 groups of 5.

5. Students should draw 7 groups of 1.

Vocabulary Check



Use the vocabulary to label each number in the division sentence.

quotient

divisor

dividend

6. dividend

→ 48 ÷ 8 = 6 ←

8. quotient

7. divisor

Name _____

Operations and Algebraic Thinking
3.OA.4, 3.OA.6, 3.OA.7

CCSS

MY Homework

Lesson 5

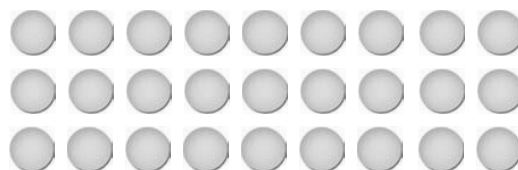
Inverse Operations

Homework Helper



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The array represents 27 children lined up in 3 rows. Use the array to find each unknown.



$$9 \times \blacksquare = 27$$

$$? \div 3 = 9$$

$$\blacksquare = 3$$

$$? = 27$$

You know 3 rows of 9 = 27.

So, 9 rows of 3 = 27 and
 $27 \div 3 = 9$.

Practice

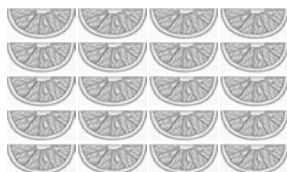
Algebra Use the array to find each unknown.

1. $\blacksquare \times 4 = 20$

$$? \div 5 = 4$$

$$\blacksquare = \underline{5}$$

$$? = \underline{20}$$



2. $4 \times \blacksquare = 16$

$$? \div 4 = 4$$

$$\blacksquare = \underline{4}$$

$$? = \underline{16}$$



3. $7 \times \blacksquare = 21$

$$? \div 7 = 3$$

$$\blacksquare = \underline{3}$$

$$? = \underline{21}$$

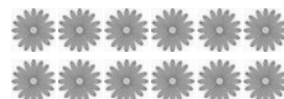


4. $2 \times \blacksquare = 12$

$$? \div 2 = 6$$

$$\blacksquare = \underline{6}$$

$$? = \underline{12}$$



Write the fact family for each set of numbers.

5. 5, 8, 40

$$\underline{5 \times 8 = 40} \quad \underline{40 \div 5 = 8}$$

$$\underline{8 \times 5 = 40} \quad \underline{40 \div 8 = 5}$$

6. 6, 7, 42

$$\underline{6 \times 7 = 42} \quad \underline{42 \div 6 = 7}$$

$$\underline{7 \times 6 = 42} \quad \underline{42 \div 7 = 6}$$

Write the set of numbers for each fact family.

7. $4 \times 9 = 36$ $36 \div 4 = 9$

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

4, 9, 36

8. $2 \times 8 = 16$ $16 \div 2 = 8$

$2 \times 8 = 16$ $16 \div 8 = 2$

2, 8, 16



Problem Solving

Mathematical

9. **PRACTICE 4 Model Math** Tia has \$35 to spend on socks for the family. If each pair of socks costs \$5, how many pairs can she buy? Write a division sentence to solve.

$\$35 \div \$5 = 7$; Tia can buy 7 pairs of socks.

Vocabulary Check



Draw a line to connect each vocabulary word with its definition.

- | | | |
|------------------------|-------|--|
| 10. dividend | _____ | the number being divided |
| 11. divisor | _____ | a group of related facts that use the same numbers |
| 12. fact family | _____ | the answer to a division problem |
| 13. inverse operations | _____ | the number by which a dividend is divided |
| 14. quotient | _____ | operations that undo each other |

Test Practice

15. Which pair shows inverse operations?

- ☒ A $2 \times 2 = 4$; $4 \div 2 = 2$ ☐ C $2 \times 2 = 4$; $8 \div 4 = 2$
☐ B $2 \times 2 = 4$; $4 - 2 = 2$ ☐ D $2 \times 2 = 4$; $4 \div 4 = 1$

MY Homework

Lesson 6

Problem Solving: Use Models

Homework Helper

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Lucy needs 7 craft sticks to make a puzzle. She has 28 craft sticks. How many puzzles can Lucy make? Use a model to solve.

1 Understand

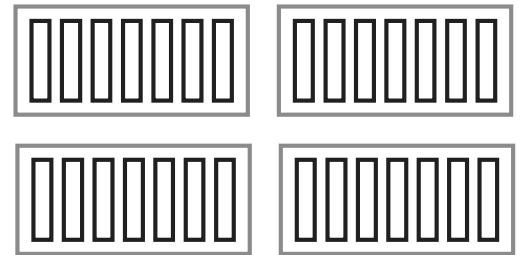
Lucy has 28 craft sticks. She needs 7 sticks to make a puzzle.
Find how many puzzles Lucy can make.

2 Plan

Divide 28 craft sticks into equal groups of 7.

3 Solve

There are 4 equal groups of 7 craft sticks.
The model shows that $28 \div 7 = 4$.
So, Lucy can make 4 puzzles.



4 Check

Use multiplication to check. $4 \times 7 = 28$
So, the answer is correct.


Problem Solving

- Brandon spent \$20 on school supplies. He bought five different items that each cost the same amount. How much did each item cost? Use a model to solve.

Each item cost \$4.

Solve each problem by using a model.

Mathematical

- 2. PRACTICE**  **Use Math Tools** Alice planted 6 tomato plants, 4 bean plants, and 2 pepper plants. Each row had 6 plants. How many rows did Alice plant?

2 rows

- 3.** At the circus, there are 18 clowns. The clowns drive around in little cars. If there are 3 clowns in each car, how many cars are there?

6 cars

- 4.** Mr. and Mrs. Carson took Sarah, Brent, and Joanie to see a movie. They paid \$50 in all. The Carsons spent \$15 on snacks. How much did each ticket cost?

\$7

- 5.** Mrs. Glover had 25 rare coins. She divided them evenly among her 5 grandchildren. How many coins did each grandchild get?

5 coins

- 6.** A singer performed 9 songs at a recital. She had 3 weeks to practice. How many songs did she practice each week if she practiced an equal number of songs each week?

3 songs

My Work!



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