

Lesson 4

Understand the Meaning of Division

Name: _____

Prerequisite: How can you make equal groups?



Study the example problem showing equal groups and unequal groups. Then solve problems 1–6.

Example

Caroline has 12 keys. She has 3 key chains.
She puts the same number of keys on each key chain.



Caroline puts 4 keys on each key chain.

- B 1** Danny puts his keys on key chains.



There are 8 keys in all.

There are 4 groups of keys.

There are 2 keys in each group.

- B 2** Maren puts her keys on key chains.



There are 15 keys in all.

There are 3 groups of keys.

There are 5 keys in each group.

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Solve.

- M 3** Rita has 10 pens. She puts them in 2 boxes. Each box has the same number of pens. Draw Rita's pens in the 2 boxes.

Students should draw 2 boxes with 5 pens in each box.

- B 4** Look at your drawing for problem 3. How many pens are in each box? 5

- C 5** Explain how you could find the answer to problem 4 without using your drawing.

Possible answer: There are 10 pens and 2 boxes. Each box has an equal group of pens. I know that $2 \times 5 = 10$, so there has to be 5 pens in each group.

- C 6** Fritz drew an array with 5 rows of dots. He drew 15 dots altogether. How many dots are in each row of Fritz's array? How do you know?

Possible answer: The array has 5 rows, and each row of an array is an equal group.

There are 15 dots altogether. I know that $5 \times 3 = 15$, so each row has 3 dots.

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Key

B Basic

M Medium

C Challenge



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Use Equal Groups to Think About Division

Study the example problem with a division sentence that represents equal groups. Then solve problems 1–8.

Example

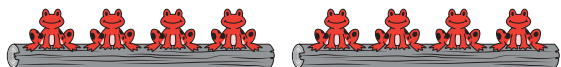
Emily picks 15 apples from her tree. She has 3 baskets. She puts an equal number of apples in each basket. How many apples does Emily put in each basket?



There are 15 apples in 3 baskets. Each basket has 5 apples.

$$15 \div 3 = 5$$

Use the picture of frogs on logs to answer problems 1–4.



B 1 How many frogs are there in all? 8

B 2 How many logs are there? 2

B 3 How many frogs are on each log? 4

M 4 Write a division sentence about the 8 frogs in 2 equal groups.

$$8 \div 2 = 4$$

If I put 8 frogs onto 4 logs, could I make equal groups?



Solve.

- M** 5 A class has 20 students. The teacher divides them into teams of 4 students. How many teams are there? Draw a picture.

Drawings will vary. Students might draw a 4×5 array or 20 objects divided into 5 groups with 4 objects in each group.

Solution: 5 teams

- C** 6 Parker said that the array of 18 rectangles shows the division problem $6 \div 3$. What is her mistake?



Possible answer: She is confusing division with

multiplication. The array shows 3×6 or 6×3 .

But it also shows 18 divided into 3 equal rows, so it shows the division problems $18 \div 3$ and $18 \div 6$.

- M** 7 Evan has 30 trading cards. He puts them in stacks that each have 5 cards. Write a division sentence to find the number of stacks. **Possible answer:**

$$30 \div 5 = 6$$

- C** 8 Explain what each number in your division sentence from problem 7 represents.

Possible answer: 30 is the total number of trading cards Evan has. 5 is the number of cards in each stack. 6 is the number of stacks.



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Reason and Write

Study the problem. Underline the parts that you think make it a particularly good answer and a helpful example.

Answers will vary. Note whether students incorporate the features they chose in their answer on the next page.

Example

Laura has 2 quilts. The quilts are made of cloth squares sewn together in an array.

- The red quilt has 24 squares, with 4 squares in each row.
- The blue quilt has 30 squares, with 6 squares in each row.

Which quilt has more rows of squares?

Use pictures, words, or numbers to explain how you got your answer.

Since the rows are all equal groups, I can use division to find out how many rows each quilt has.

To find out how many rows the red quilt has I found $24 \div 4$. I know $4 \times 6 = 24$, so $24 \div 4 = 6$. The red quilt has 6 rows.

I checked my math by drawing a picture of a quilt with 4 squares in each row. I drew 6 rows, and that made 24 squares.

Then I found $30 \div 6$ to find out how many rows are in the blue quilt. I know $6 \times 5 = 30$, so $30 \div 6 = 5$. The blue quilt has 5 rows.

I checked my math by drawing rows of 6 squares. When I had drawn 5 rows, I had 30 squares.

Since the red quilt has 6 rows and the blue quilt has only 5 rows, the red quilt has more rows.

Red quilt



Blue quilt



Where does the example...

- use numbers to explain?
- use words to explain?
- use pictures to explain?
- answer the question?



Solve the problem. Use what you learned from the example.

John is setting up chairs at tables for a party.

The round tables will have 6 chairs each, with 18 chairs altogether.

The square tables will have 4 chairs each, with 20 chairs altogether.

Are there more round tables or square tables?

Use pictures, words, or numbers to explain how you got your answer.

Since the chairs at the round tables are in equal groups of 6, I can use division to find out how many round tables there are.

I can divide the total number of chairs by how many in each group to find out the number of groups. For the round tables, I need to find $18 \div 6$. I know $3 \times 6 = 18$. So $18 \div 6 = 3$. There are 3 round tables.

I checked my math by drawing a picture of round tables with 6 chairs each. I made an X for each chair. After I drew 3 tables, I had 18 chairs.

Then I found $20 \div 4$ to find out how many square tables there are. I know $4 \times 5 = 20$, so $20 \div 4 = 5$. There are 5 square tables.

I checked this with a picture of square tables with 4 chairs each. After I drew 5 tables, I had 20 chairs.

Since there are 3 round tables and 5 square tables, there are more square tables than round tables.



Did you...

- use numbers to explain?
- use words to explain?
- use pictures to explain?
- answer the question?

