Multiplication joins equal groups to find a total, or product. Division starts with a total and breaks it up into equal groups. The result is called the **quotient**.

**Multiplication**

- **3 \times 4 = 12**
- Number of groups: 3
- Number in each group: 4
- Total: 12

**Division**

- **12 \div 3 = 4**
- Total: 12
- Number of groups: 3
- Number in each group: 4

**Think** You can use multiplication or division equations to describe a problem.

Juan arranges pennies in an array.

You can use multiplication to tell how many pennies there are in all.

\[ 4 \times 8 = 32 \text{ pennies} \quad \text{or} \quad 8 \times 4 = 32 \text{ pennies} \]

You can use division to tell how many pennies are in each row and how many rows there are.

\[ 32 \div 4 = 8 \text{ pennies in each row} \quad \text{or} \quad 32 \div 8 = 4 \text{ rows of pennies} \]

Notice that all of the equations use the same three numbers: 4, 8, and 32.
To help you solve a division problem, you can write a multiplication equation that uses the same numbers. Look at the problem below.

Nina buys 20 stickers. She puts the same number of stickers on each of 5 pages in her scrapbook. How many stickers does she put on each page?

You know the total number of stickers is 20. You also know the number of groups, or pages, is 5. The unknown number you need to find is how many in each group, or the number of stickers on each scrapbook page.

One Way
You can write a division equation.

\[ 20 \div 5 = \square \]
\[ 20 \div 5 = 4 \]

Nina puts 4 stickers on each page.

Another Way
You can write a multiplication equation.

\[ 5 \times \square = 20 \]
\[ 5 \times 4 = 20 \]

Reflect

1. Use your own words to explain how you could use multiplication to find \( 35 \div 5 \).
Read the following problem. Then answer problems 2–5.

A pet store has 18 hamsters. The shop owner wants to put 3 hamsters in each cage. How many cages does the shop owner need for all the hamsters?

2 Draw a model using equal groups or an array to show the problem.

3 Write a division equation for the problem. Use a $\square$ for the unknown number.

4 Write a multiplication equation for the problem. Use a $\square$ for the unknown number.

5 How many cages does the shop owner need? __________

Now read this problem and answer problems 6–8.

Manuel has 42 quarters. He puts them into 7 piles. He puts the same number of quarters in each pile. How many quarters are in each pile?

6 Write a division equation for the problem. Use a $\square$ for the unknown number.

7 Write a multiplication equation for the problem. Use a $\square$ for the unknown number.

8 How many quarters are in each pile? __________
Let’s Talk About It
Solve the problems below as a group.

9 Look at your answer to problem 6. Explain how you knew what equation to write.

__________________________________________________________________________

__________________________________________________________________________

Look at your answer to problem 7. How can you use your multiplication equation to solve the problem?

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__________________________________________________________________________

10 Justin knows that $8 \times 7 = 56$. What related division equations can he write?

__________________________________________________________________________

__________________________________________________________________________

Try It Another Way  Work with your group to find the number that goes in the box for each problem.

11 $3 × □ = 24$

$24 ÷ 3 = □$

$□ = \underline{□}$

12 $□ \times 9 = 54$

$54 ÷ □ = 9$

$□ = \underline{□}$
Talk through these problems as a class, then write your answers below.

13 **Identify**  Elisa planted the same number of flowers in each pot. Look at the picture below. Then write two multiplication equations and two division equations that the picture shows.

![Flowers in pots](image)

14 **Explain**  Yasmin saw the problem $63 \div \square = 7$. She thought, “There are 63 things in all that are divided into groups. There are 7 in each group.” Explain how Yasmin can use multiplication to help her find the number of groups.

15 **Analyze**  Marissa has 4 boxes of markers with 6 markers in each box. She wrote the following equations:

\[ 4 \times 6 = 24 \]
\[ 6 \times 4 = 24 \]
\[ 24 \div 4 = 6 \]
\[ 24 \div 6 = 4 \]

Circle the number in each equation that shows the total number of markers. Put a box around the number in each equation that shows the number of groups. Underline the number in each equation that shows the number in each group.
16 **Put It Together**  Use what you have learned to complete this task.

**Part A**  Write a problem that can be solved using the equation $5 \times \Box = 15$. Make the problem about arranging desks in a classroom.

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**Part B**  Solve your problem. Draw a model that shows your problem and solution.