What is going on when we divide numbers?

When you divide, you separate a number of items into equal-sized groups.

Suppose you have a total of 6 socks. One way you can divide the socks is to make 3 groups and put 2 socks in each group.

There are 6 socks in all. There are 3 groups. There are 2 socks in each group.

Think You can use division to find the number in each group.

When you know the total and the number of groups, you can divide to find how many to put in each group.

Jake has 8 cookies and 2 plates. There are 8 cookies in all. There are 2 groups.

He puts the same number of cookies on each plate. $8 \div 2$ tells you how many cookies Jake puts on each plate.

There are 4 cookies on each plate.

$8 \div 2 = 4$
Think  You can use division to find the number of groups.

When you know the total and the number in each group, you can divide to find how many groups you can make.

Missy has 15 balloons. She ties them into groups of 3.

\[
\begin{align*}
15 \text{ balloons} & \quad 5 \text{ groups of 3 balloons} \\
15 \div 3 & \text{ tells you how many groups Missy can make.} \\
\text{There are 15 balloons in all. There are 3 balloons in each group.} \\
\text{There are 5 groups of balloons.} \\
\text{You can write the division equation } 15 \div 3 = 5.
\end{align*}
\]

Reflect

1. Use your own words to explain how drawing a picture can help you solve a division problem.

   
   
   
   
   
   
   
   
   Did you notice that a division equation always starts with the total amount?
Lesson 4  Equal Groups in Division

Think About

Let’s Explore the Idea Using a model to show equal groups can help you think about division.

Use the pictures of shells and pails to answer problems 2–5.

2 How many shells are there? ____________

3 How many pails are there? ____________

4 Ben wants to put the same number of shells in each of the pails. How many shells should he put in each pail? ____________

5 What division equation can you write to tell about the shells? ________________

Now try these two problems.

6 Marc’s dad picked 24 oranges. He wants to put all the oranges in bags. He decides to put 6 oranges in each bag. Draw a model to show how many bags he needs.

7 What division equation can you write about the oranges? ________________
Let’s Talk About It
Solve the problems below as a group.

8 Look at the picture you drew for problem 6. Explain how you decided what to draw to help you solve the problem.

9 Look at problem 6 again. Imagine Marc’s dad changes his mind. Instead of putting 6 oranges in each bag, he decides to put all the oranges in 6 bags. He will put the same number of oranges in each bag. How does this change the division in problem 6?

10 Draw a model to show how many oranges will go in each of the 6 bags.

Try It Another Way Work with your group to use the arrays to solve the division equations.

11 \[45 \div 5 = \quad \]

\[\begin{array}{cccccc}
\ast & \ast & \ast & \ast & \ast \\
\ast & \ast & \ast & \ast & \ast \\
\ast & \ast & \ast & \ast & \ast \\
\end{array}\]

12 \[42 \div 7 = \quad \]

\[\begin{array}{cccccc}
\triangle & \triangle & \triangle & \triangle & \triangle \\
\triangle & \triangle & \triangle & \triangle & \triangle \\
\triangle & \triangle & \triangle & \triangle & \triangle \\
\end{array}\]
Talk through these problems as a class, then write your answers below.

**13 Explain** Maddy used this array of stars to show the division problem $8 \div 4 = 2$.
What did she do wrong?

**14 Create** Write a problem that could be solved using the division equation $16 \div 2 = 8$.

**15 Compare** David and Mitch each bought a box of pears at the grocery store. Look at how each boy divided his pears into equal groups.

What is the same about the two boxes of pears?

What is different about the way the boys divided their pears into groups?
16 Put It Together  Use what you have learned to complete this task.

Cory has 20 crayons. He wants to give the same number of crayons to each of his friends.

**Part A**  Write two different questions about Cory’s crayons that can be answered using division.

1. ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

2. ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

**Part B**  Choose one question to answer. Circle the number of the question you chose. Show how to find the answer using pictures or an array. Then write the division equation that shows the answer to your question.

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________