Objective

Explore the meaning of division.

Operations and Algebraic Thinking

Meaning of Division

Students explore division as sharing and repeated subtraction, and they should be learning to recognize the relationship between division and multiplication. Both concepts contribute to developing students' number sense, which enables them to understand when and how to use each of the two operations.

Try It! *Perform the Try It! activity on the next page.*

Talk About It

Discuss the Try It! activity.

■ **Ask:** *What is the inverse of repeated subtraction?*

■ **Ask:** *Why is distributing among groups called* sharing?

■ **Ask:** *How does knowing that multiplication is the inverse of division help you when you are dividing?*

Solve It

Reread the problem with students. Have students compare the models in Steps 1 and 2 and write an equation for each situation.

More Ideas

For other ways to teach about the meaning of division—

■ Have students work in groups of 3 or 4 using Color Tiles to build arrays of different sizes. Students can take turns building arrays and writing division and multiplication sentences to represent them.

■ Distribute Base Ten Blocks (10 rods and 20 units per group) to groups of 4 students. Have students model various problems, such as 56 ÷ 4. Students should first model 56 using 5 rods and 6 units, and then divide the rods and units into 4 equal groups. They will need to regroup one rod as 10 units to find the quotient of 14. Present real-world problems to give students practice recognizing when to use division and identifying the meaning of the divisor.

Formative Assessment

Have students try the following problem.

Nikki is displaying 60 pictures in equal rows. If there are 5 rows, how many pictures are in each row?

A. 10   **B.** 12   **C.** 14   **D.** 20

Try It!   20 minutes | Groups of 4

Here is a problem about division of whole numbers.

Two schools are each sending 72 students to a spelling bee. School A is sending six students from each of their 3rd grade classes. How many 3rd grade classes does school A have? School B has six 3rd grade classes. How many students can be sent from each class?

Introduce the problem. Then have students do the activity to solve the problem. Distribute Centimeter Cubes, paper, and pencils. Help students recognize this as a division situation.

Materials
- Centimeter Cubes (72 per group)
- paper (2 sheets per group)
- pencils (1 per group)

1. Say: *You can think about division as repeated subtraction.* Have students model the 72 students with Centimeter Cubes and subtract 6 cubes at a time until no cubes remain. **Ask:** *How many times did you subtract 6 cubes?*

2. Say: *You also can share the cubes among different groups to solve the problem.* Have students distribute the 72 cubes among 6 groups until no cubes remain. **Ask:** *How many cubes are in each group?*

3. Say: *Another way to model the problem is to build an array with 72 cubes and 6 cubes in each row.* **Say:** *The array also models multiplication. Write a division sentence and a multiplication sentence for the array.*

⚠ Look Out!

Some students may have difficulty forming groups or building arrays. Students can draw 6 circles on the sheet of paper for Step 2, and then place one cube at a time in each circle until all the cubes have been used. For Step 3, encourage students to line up the rows and columns as they build each row so they can easily see the number of rows and columns.
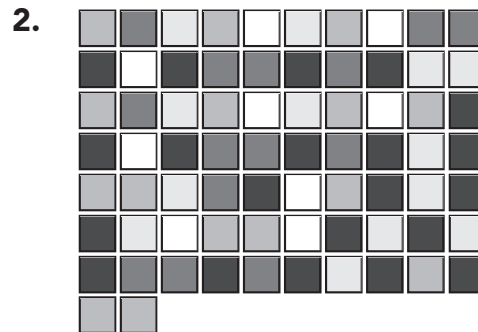
Use Centimeter Cubes to match the set shown. Divide the set into equal groups of the given size. Write a number sentence to show the quotient.

(Check students' work.)

1.
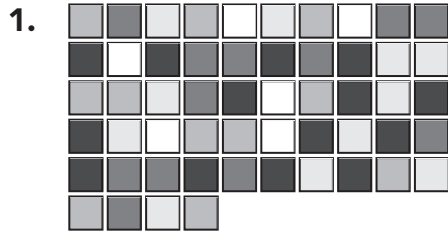
Divide into groups of 9.

$54 \div 9 = 6$

2.

Divide into groups of 8.

$72 \div 8 = 9$

Using Centimeter Cubes, model the division problem. Sketch the model. Write a number sentence for the model. (Check students' models.)

3. 39 cubes into 13 groups

$39 \div 13 = 3$

Write a number sentence for each quotient.

4. 81 cubes into 9 groups

$81 \div 9 = 9$

5. 77 cubes into 11 groups

$77 \div 11 = 7$

6. 70 cubes into 14 groups

$70 \div 14 = 5$

7. 63 cubes into 7 groups

$63 \div 7 = 9$

8. 96 cubes into 8 groups

$96 \div 8 = 12$

9. 75 cubes into 15 groups

$75 \div 15 = 5$

Challenge! For Problems 7–9, write a different division sentence using the same numbers and the same quotient. Choose one and draw a picture to support your sentence.

Challenge: (Sample) For Problem 7, 63 ÷ 9 = 7. For Problem 8, 96 ÷ 12 = 8. For Problem 9, 75 ÷ 5 = 15.

Name _____
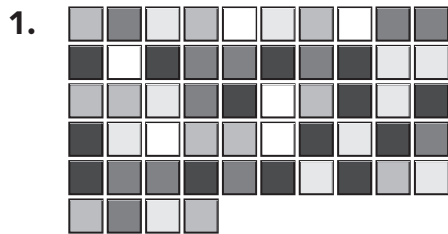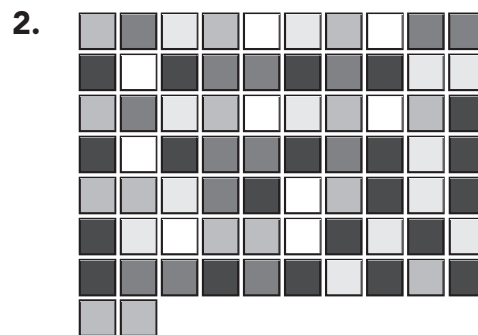
Use Centimeter Cubes to match the set shown. Divide the set into equal groups of the given size. Write a number sentence to show the quotient.

1.

Divide into groups of 9.

2.

Divide into groups of 8.

_____   _____

Using Centimeter Cubes, model the division problem. Sketch the model. Write a number sentence for the model.

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Write a number sentence for each quotient.

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Name _____

Challenge!   For Problems 7–9, write a different division sentence using the same numbers and the same quotient. Choose one and draw a picture to support your sentence.

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