Name _____

Division and the Distributive Property

Essential Question How can you use the Distributive Property to find quotients?

Investigate

Materials ■ color pencils ■ grid paper

You can use the Distributive Property to break apart numbers to make them easier to divide.

The Distributive Property of division says that dividing a sum by a number is the same as dividing each addend by the number and then adding the quotients.
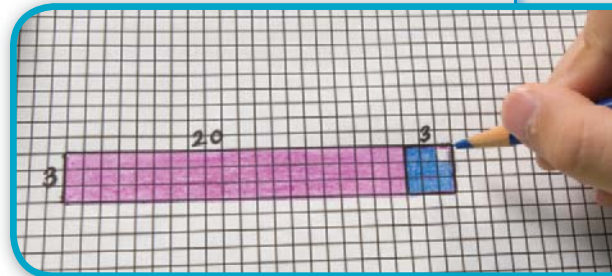
A. Outline a rectangle on a grid to model 69 ÷ 3.

Shade columns of 3 until you have 69 squares.
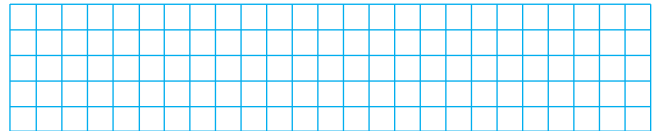
How many groups of 3 can you make? _____

B. Think of 69 as 60 + 9. Break apart the model into two rectangles to show (60 + 9) ÷ 3. Label and shade the smaller rectangles. Use two different colors.
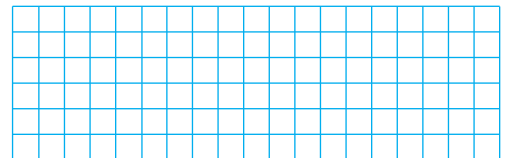
C. Each rectangle models a division.

69 ÷ 3 = (_____ ÷ 3) + (_____ ÷ 3)

= _____ + _____

= _____

D. Outline another model to show 68 ÷ 4.

How many groups of 4 can you make? _____

E. Think of 68 as 40 + 28. Break apart the model, label, and shade to show two divisions.

68 ÷ 4 = (_____ ÷ 4) + (_____ ÷ 4)

= _____ + _____

= _____

Draw Conclusions

1. Explain how each small rectangle models a quotient and a product in Step C.

_____

_____

_____

2. Compare your answer in Step A to the final quotient in Step C. What can you conclude?

_____

_____

3. **THINK SMARTER**   To find the quotient 91 ÷ 7, would you break up the dividend into 90 + 1 or 70 + 21? Explain.
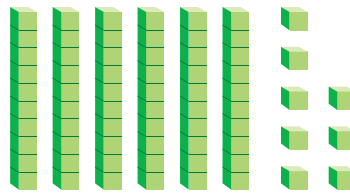
_____

_____

Make Connections

Hands On

MATHEMATICAL PRACTICES ⑦

Look for Structure
Describe another way you could use the Distributive Property to solve 68 ÷ 4.

You can also model 68 ÷ 4 using base-ten blocks.

STEP 1 Model 68.

68 = _____ + _____

STEP 2 Divide the longs into 4 equal groups. 4 longs divide into 4 equal groups with 2 longs left. Regroup 2 longs as 20 small cubes. Divide them evenly among the 4 groups.

60 ÷ 4 = _____
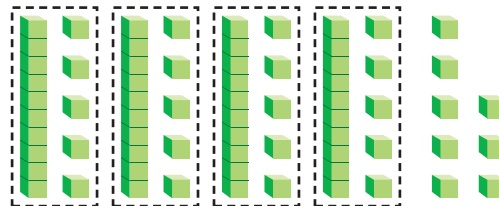
STEP 3 Divide the 8 small cubes into the 4 equal groups.

8 ÷ 4 = _____

So, 68 ÷ 4 = (60 ÷ 4) + (8 ÷ 4) = _____ + _____ = _____

Name _____

Share and Show MATH BOARD

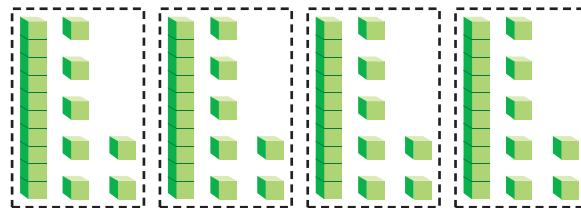**Model the division on the grid.**

✓ **1.** $26 \div 2 = (\underline{\hspace{1cm}} \div 2) + (\underline{\hspace{1cm}} \div 2)$

$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$= \underline{\hspace{1cm}}$

2. $45 \div 3 = (\underline{\hspace{1cm}} \div 3) + (\underline{\hspace{1cm}} \div 3)$

$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$= \underline{\hspace{1cm}}$

Find the quotient.

✓ **3.** $86 \div 2$

$= (\underline{\hspace{1cm}} \div 2) + (\underline{\hspace{1cm}} \div 2)$

$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$= \underline{\hspace{1cm}}$

4. $208 \div 4$

$= (\underline{\hspace{1cm}} \div 4) + (\underline{\hspace{1cm}} \div 4)$

$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$= \underline{\hspace{1cm}}$
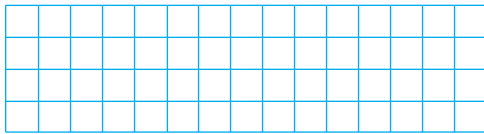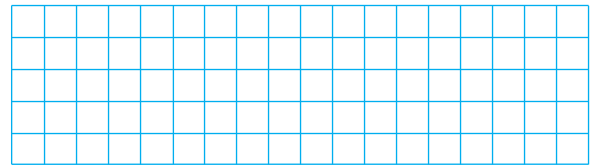
Use base-ten blocks to model the quotient.
Then record the quotient.

5. $88 \div 4 = \underline{\hspace{1cm}}$

6. $36 \div 3 = \underline{\hspace{1cm}}$

7. $186 \div 6 = \underline{\hspace{1cm}}$

Problem Solving • Applications Real World

8. **WRITE** ▸ *Math* Explain how you can model finding quotients using the Distributive Property.

_____

_____

_____

_____

_____

9. **GO DEEPER** Justin earned $50 mowing lawns and $34 washing cars. He wants to divide his money into 3 equal accounts. How much will he put in each account? Explain.

_____

_____

_____

_____

_____

Pose a Problem

10. **THINK SMARTER** Christelle went to a gift shop. The shop sells candles in a variety of sizes and colors. The picture shows a display of candles.

Write a problem that can be solved using the picture.

Pose a problem.

_____

_____

_____

_____

_____

Solve your problem.

• **MATHEMATICAL PRACTICE ①** **Describe** how you could change the problem by changing the number of rows of candles. Then solve the problem.

_____

_____

_____

_____

11. **THINK SMARTER** For 11a–11d, choose Yes or No to indicate if the expression shows a way to break apart the dividend to find the quotient $147 \div 7$.

11a. $(135 \div 7) + (10 \div 7)$ ○ Yes ○ No

11b. $(147 \div 3) + (147 \div 4)$ ○ Yes ○ No

11c. $(140 \div 7) + (7 \div 7)$ ○ Yes ○ No

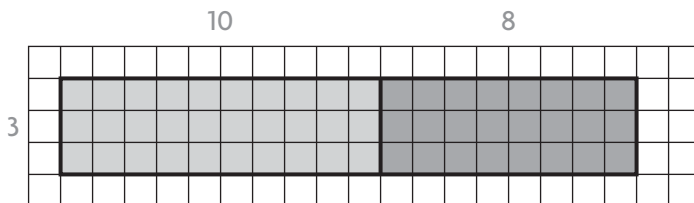11d. $(70 \div 7) + (77 \div 7)$ ○ Yes ○ No

Division and the Distributive Property

Find the quotient.

1. $54 \div 3 = ($ __30__ $\div 3) + ($ __24__ $\div 3)$

   $= $ __10__ $+$ __8__

   $= $ __18__

10   8

3

2. $81 \div 3 = $ _____

3. $232 \div 4 = $ _____

4. $305 \div 5 = $ _____

5. $246 \div 6 = $ _____

6. $69 \div 3 = $ _____

7. $477 \div 9 = $ _____

Problem Solving · Real World

8. Cecily picked 219 apples. She divided
   the apples equally into 3 baskets. How
   many apples are in each basket?

   _____

9. Jordan has 260 basketball cards. He
   divides them into 4 equal groups. How
   many cards are in each group?

   _____

10. The Wilsons drove 324 miles in 6 hours.
    If they drove the same number of miles
    each hour, how many miles did they drive
    in 1 hour?

    _____

11. Phil has 189 stamps to put into his stamp
    album. He puts the same number of stamps
    on each of 9 pages. How many stamps does
    Phil put on each page?

    _____

12. **WRITE** *Math* Explain how to use the Distributive
    Property to solve $48 \div 3$. Include a model to support
    your explanation.

    _____

    _____

Lesson Check (4.NBT.B.6)

1. A landscaping company planted 176 trees in 8 equal rows in the new park. How many trees did the company plant in each row?

_____

2. Arnold can do 65 push-ups in 5 minutes. How many push-ups can he do in 1 minute?

_____

Spiral Review (4.OA.A.3, 4.NBT.B.5, 4.NBT.B.6)

3. Last Saturday, there were 1,486 people at the Cineplex. There were about the same number of people in each of the 6 theaters. Between which two numbers does the number of people in each theater fall?

_____

_____

_____

4. Nancy walked 50 minutes each day for 4 days last week. Gillian walked 35 minutes each day for 6 days last week. How does the total number of minutes that Gillian walked compare to the total number of minutes that Nancy walked?

_____

_____

_____

5. Three boys share 28 toy cars equally. How many cars did each boy get and how many were left over?

_____

6. An airplane flies at a speed of 474 miles per hour. How many miles does the plane fly in 5 hours?

_____

FOR MORE PRACTICE
GO TO THE
Personal Math Trainer