Name _____

Interpret the Remainder

Essential Question How can you use remainders in division problems?

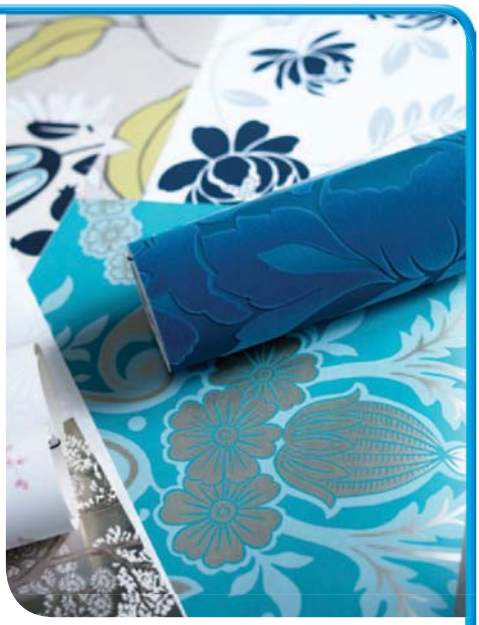
Common Core **Operations and Algebraic Thinking—4.OA.A.3** *Also 4.NBT.B.6*

MATHEMATICAL PRACTICES
MP2, MP7, MP8

Unlock the Problem

Real World

Magda has some leftover wallpaper 73 inches long. She wants to cut it into 8 pieces to use around the photos in her scrapbook. Each piece will have equal length. How long will each piece be?



When you solve a division problem with a remainder, the way you interpret the remainder depends on the situation and the question.

One Way Write the remainder as a fraction.

The divisor is _____ pieces.

The _____ is 73 inches.

Divide to find the quotient and remainder. $8\overline{)73}$ 9 r1

The remainder represents 1 inch left over, which can also be divided into 8 equal parts and written as a fraction.

$$\frac{\text{remainder}}{\text{divisor}} = \_\_\_\_$$

Write the quotient with the remainder written as a fraction. _____

So, each piece will be _____ inches long.

Remember

You can use multiples, counters, or draw a quick picture to divide.

Try This!

Daniel made 32 ounces of soup for 5 people. How many ounces will each person get? Complete the division.

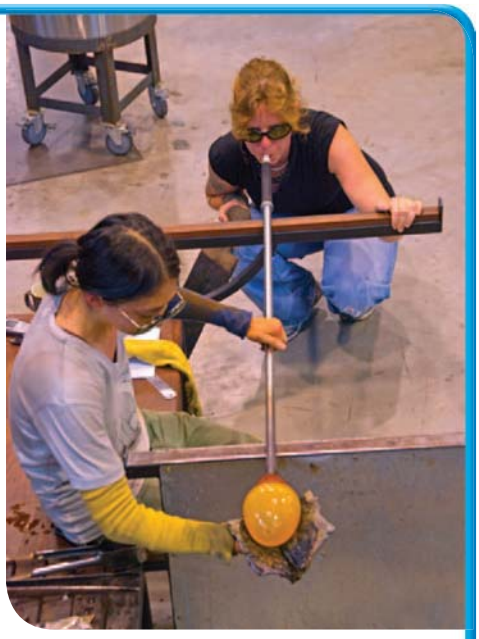
$5\overline{)32}$ ____

Each person gets _____ ounces.

Math Talk **MATHEMATICAL PRACTICES 7**

Explain what the 2 in the answer represents.

Other Ways



A **Use only the quotient.**

Ben is a tour guide at a glass-blowing studio. He can take no more than 7 people at a time on a tour. If 80 people want to see the glass-blowing demonstration, how many groups of 7 people will Ben show around?

First, divide to find the quotient and remainder.
Then, decide how to use the quotient and remainder.

The quotient is _____.

$$7\overline{)80} \quad \begin{matrix} 11 \\ \text{r } \square \end{matrix}$$

The remainder is _____.

Ben can give tours to 7 people at a time. The quotient is the number of tour groups of exactly 7 people he can show around.

So, Ben gives tours to _____ groups of 7 people.

B **Add 1 to the quotient.**

If Ben gives tours to all 80 people, how many tours will he give? A tour can have no more than 7 people. To show all 80 people around, Ben will have to give 1 more tour.

So, Ben will give _____ tours in all for 80 people.

C **Use only the remainder.**

Ben gives tours to all 80 people. After he completes the tours for groups of 7 people, how many people are in his last tour?

The remainder is 3.

So, Ben's last tour will have _____ people.

Math Talk

MATHEMATICAL PRACTICES 8

Use Repeated Reasoning
Why would you not write the remainder as a fraction when you found the number of vans needed?

Try This!

Students are driven to soccer games in vans. Each van holds 9 students. How many vans are needed for 31 students?

Divide. 31 ÷ 9 _____

Since there are _____ students left over, _____ vans are needed to carry 31 students.

Name _____

Share and Show MATH BOARD

1. Olivia baked 53 mini-loaves of banana bread to be sliced for snacks at a craft fair. She will place an equal number of loaves in 6 different locations. How many loaves will be at each location?

   a. Divide to find the quotient and remainder.

   b. Decide how to use the quotient and remainder to answer the question.

$$6\overline{)53}$$ $$\square \text{ r } \square$$

_____

Interpret the remainder to solve.

2. What if Olivia wants to put only whole loaves at each location? How many loaves will be at each location?

3. Ed carves 22 small wooden animals to sell at the craft fair. He displays them in rows with 4 animals in a row. How many animals will not be in equal rows?

On Your Own

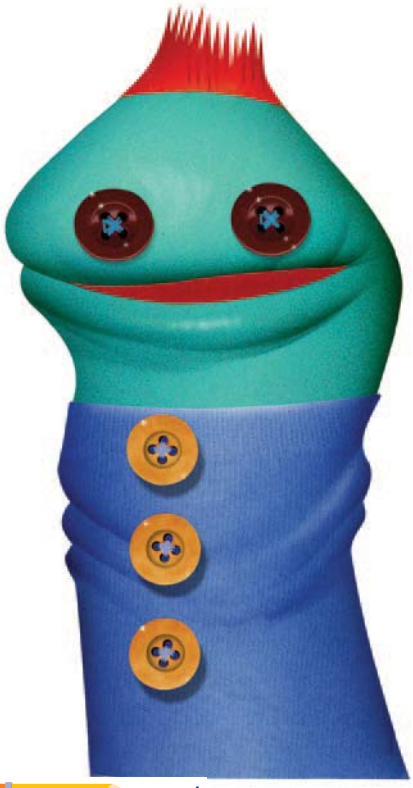
Interpret the remainder to solve.

4. Myra has a 17-foot roll of crepe paper to make 8 streamers to decorate for a party. How long will each streamer be if she cuts the roll into equal pieces?

5. THINK SMARTER Juan has a piano recital next month. Last week he practiced for 8 hours in the morning and 7 hours in the afternoon. Each practice session is 2 hours long. How many full practice sessions did Juan complete?

6. GO DEEPER A total of 25 students sign up to be hosts on Parent's Night. Teams of 3 students greet parents. How many students cannot be on a team? Explain.

Problem Solving • Applications Real World



Use the picture for 7–9.

7. Teresa is making sock puppets just like the one in the picture. If she has 53 buttons, how many puppets can she make?

8. THINK SMARTER Write a question about Teresa and the sock puppets for which the answer is 3. Explain the answer.

9. MATHEMATICAL PRACTICE 3 **Interpret a Result** How many more buttons will Teresa need if she wants to make 12 puppets? Explain.

WRITE Math
Show Your Work

10. GO DEEPER A total of 56 students signed up to play in a flag football league. If each team has 10 students, how many more students will need to sign up so all of the students can be on a team?

Personal Math Trainer

11. THINK SMARTER+ A teacher plans for groups of her students to eat lunch at tables. She has 34 students in her class. Each group will have 7 students. How many tables will she need? Explain how to use the quotient and remainder to answer the question.

Name _____

Interpret the Remainder

COMMON CORE STANDARD—4.OA.A.3
Use the four operations with whole numbers to solve problems.

Interpret the remainder to solve.

1. Hakeem has 100 tomato plants. He wants to plant them in rows of 8. How many full rows will he have?

Think: 100 ÷ 8 is 12 with a remainder of 4. The question asks "how many full rows," so use only the quotient.

12 full rows

2. A teacher has 27 students in her class. She asks the students to form as many groups of 4 as possible. How many students will not be in a group?

3. A sporting goods company can ship 6 footballs in each carton. How many cartons are needed to ship 75 footballs?

Problem Solving Real World

4. Joanna has 70 beads. She uses 8 beads for each bracelet. She makes as many bracelets as possible. How many beads will Joanna have left over?

5. A teacher wants to give 3 markers to each of her 25 students. Markers come in packages of 8. How many packages of markers will the teacher need?

6. WRITE Math Write word problems that represent each way you can use a remainder in a division problem. Include solutions.

Lesson Check (4.OA.A.3)

1. Marcus sorts his 85 baseball cards into stacks of 9 cards each. How many stacks of 9 cards can Marcus make?

2. A minivan can hold up to 7 people. How many minivans are needed to take 45 people to a basketball game?

Spiral Review (4.OA.A.1, 4.NBT.B.4, 4.NBT.B.5, 4.NBT.B.6)

3. Mrs. Wilkerson cut some oranges into 20 equal pieces to be shared by 6 friends. How many pieces did each person get and how many pieces were left over?

4. A school bought 32 new desks. Each desk cost $24. Estimate how much the school spent on the new desks.

5. Kris has a box of 8 crayons. Sylvia's box has 6 times as many crayons as Kris's box. How many crayons are in Sylvia's box?

6. Yesterday, 1,743 people visited the fair. Today, there are 576 more people at the fair than yesterday. How many people are at the fair today?

FOR MORE PRACTICE GO TO THE Personal Math Trainer