

Solving More Division Problems

Math Focus Points

- ◆ Describing and comparing strategies used to solve division problems
- ◆ Using knowledge of multiples of 10 to solve division problems
- ◆ Solving division problems with 2-digit divisors
- ◆ Making sense of remainders in terms of problem contexts

Today's Plan	Materials
<p>1 ACTIVITY Division Problems</p> <p> 40 MIN  CLASS  INDIVIDUALS</p>	<ul style="list-style-type: none"> • <i>Student Activity Book</i>, p. 53
<p>2 DISCUSSION Division Strategies</p> <p> 20 MIN  CLASS  PAIRS</p>	<ul style="list-style-type: none"> • <i>Student Activity Book</i>, p. 53
<p>3 SESSION FOLLOW-UP Daily Practice</p>	<ul style="list-style-type: none"> • <i>Student Activity Book</i>, p. 54 • <i>Student Math Handbook</i>, pp. 38–39

Ten-Minute Math

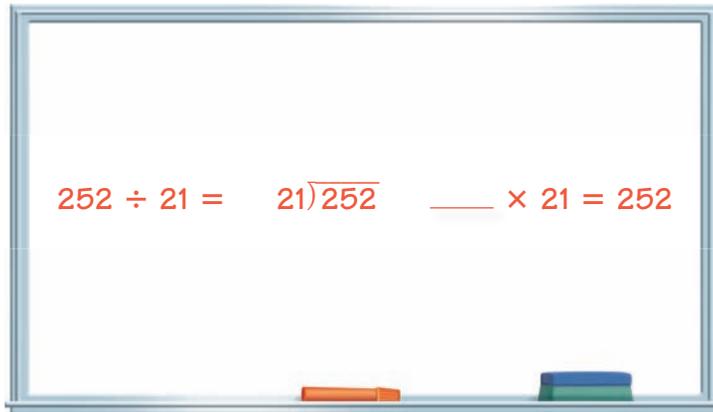
Quick Images: Seeing Numbers Show Images 34–36 (one at a time) on *Quick Images: Seeing Numbers* (T12). Ask students to find the total number of shapes and write at least one *multiplication* and one *division* equation for each pattern. Have two or three students explain how they saw the images (including any revisions they made) and their equations, showing how their numbers match the patterns.

1 ACTIVITY

Division Problems



Write the following problems on the board or overhead:



Ask students to share a story with a partner that will fit each of these problems. Also ask if the same story can fit all three problems.

Let's use Shandra's story. There are 252 fourth and fifth graders who need to be placed in 21 equal-sized teams for Field Day. How many people will be on each team? ❶

Review with the students what the numbers in the problem mean.

What does the number 252 represent? (*the number of fourth and fifth graders*) What does the number 21 represent? (*the number of teams*) What will our answer represent? (*the number of people on a team*)

Discuss how the story problem fits all three problems, so the different notations you wrote all mean $252 \div 21$.

Ask students to think about how they would start the problem.

Walter pointed out that he knows that 210 is 10×21 , and this is close to 252.

When you solve division problems, you can think about a story context like Shandra's, and decide what each number in the story means, and what question you are trying to answer. Remember that a good starting place is the multiples of 10, 20, 30, and so on.

Tell students that as they start working on *Student Activity Book* page 53, they should think about what strategy they are using to solve division problems. How do they start? What do they do next? When they finish, they should find a partner and share their solutions. Remind students that the posters of division strategies they created in Session 3.1 may be

Teaching Note

- ❶ **Team Stories** Teams are used as an example because it is a context that students know and understand and that may help them solve the problem. If your class comes up with a different context that works for your students, use that instead.

Name _____ Date _____

Number Puzzles and Multiple Towers

Division Problems

Solve the following problems. Make sure anyone looking at your work can tell how you solved the problem.

- Write a word problem for $21 \overline{)252}$ and solve it.
- There are 415 biographies in the school library. If each shelf holds 27 books, how many shelves are completely filled? How many books are left?
- Write a word problem for the equation $525 \div 21 = \underline{\hspace{2cm}}$. Then solve it.
- There are 748 students eating lunch in the cafeteria at school. The same number of students is sitting at each of 22 tables. How many students are sitting at each table?

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▲ **Student Activity Book, p. 53**

Teaching Note

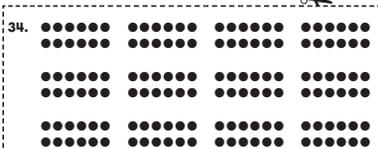
- 2 **Understanding Remainders** Continue to use story contexts to facilitate understanding of the meaning of remainders in division problems. Remind students to use, or create, the story context to help them determine what needs to be done with the remainder.

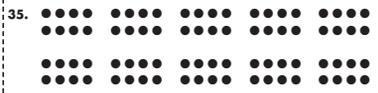
Professional Development

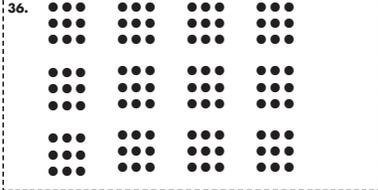
- 3 **Teacher Note:** Division Strategies, p. 170
- 4 **Teacher Note:** Developing Computation Strategies that Make Sense, p. 171

Number Puzzles and Multiple Towers

Quick Images: Seeing Numbers (page 12 of 12)

34. 

35. 

36. 

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T12

▲ Transparencies, T12 

helpful if they are not sure how to get started in solving a division problem. If necessary, remind students of the convention of recording the remainder with a capital “R,” for example, $170 \div 15 = 11 \text{ R}5$. 2

As students work on the division problems, circulate and notice what division strategies and notation students are using. 3 4 The discussion at the end of the session will focus on Problem 1. Find several students who have solved the problem in different ways, and ask them to be prepared to explain their thinking.

ONGOING ASSESSMENT: Observing Students at Work

Students solve division problems.

- **Are students able to solve division problems accurately?** What strategies are students using?
- **Are students using relationships between numbers to solve the problem?** (e.g., $210 \div 21 = 10$, $420 \div 21 = 20$, $630 \div 21 = 30$, and so on)
- **What size numbers are they using?** Groups of 10? Groups of multiples of 10?
- **Are students able to keep track of their work?** Do they know what part of the problem they have solved and what they still have to solve? What their answer is?

As students are working, circulate around the room and ask questions such as the following:

- **What do the numbers mean? Where is your answer? How do you know that it's correct? Did you answer the question to the word problem?**

DIFFERENTIATION: Supporting the Range of Learners

Intervention If students seem unsure how to start, ask them whether any of the work with the multiple towers and finding every 10th multiple can help.

Students who are still developing strategies for division might need to work with smaller numbers and use tools. Use problems such as $105 \div 7$, $96 \div 6$, and $72 \div 3$. The questions you ask students can remain the same.

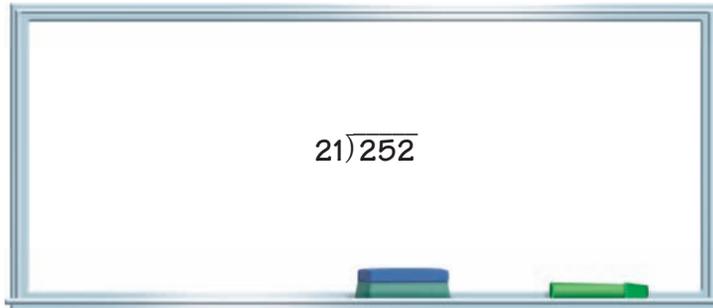
2 DISCUSSION Division Strategies



Math Focus Points for Discussion

- ◆ Describing and comparing strategies used to solve division problems

Write Problem 1 from *Student Activity Book* page 53 on the board.



Call on students you identified to explain their strategy for doing the computation. Either you or the student should record the strategy on the board. Ask questions as each student explains a strategy.

How did you decide where to start?

How did you decide what to do next?

How did you know what your answer was?

Does anyone have questions about this strategy?

Who else solved the problem in this way?



Students record and explain the strategies they used to solve $252 \div 21$.

Name _____ Date _____

Number Puzzles and Multiple Towers **Daily Practice**

Story Problems: School Supplies

NOTE Students practice solving addition and subtraction problems in a story problem context. **Skills** 8-4, 10-13

- Mr. Mancillas had \$200 to spend on art supplies. He spent \$103.80 on drawing paper and \$86.35 on paint brushes.
 - How much did he spend on art supplies?
 - How much money did he have left after he bought the art supplies?
- Mrs. Kim had \$300 to spend on science materials. She spent \$77.49 on thermometers and \$219.99 on a microscope.
 - How much did she spend on science materials?
 - How much money did she have left after she bought the science materials?

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▲ Student Activity Book, p. 54

After several strategies are on the board, have students discuss with a partner how the strategies are similar or different.

Students might say:



“Janet multiplied $10 \times 21 = 210$, and Felix divided, $210 \div 21 = 10$.”



“They used different numbers of steps. Janet showed the subtraction, $252 - 210 = 42$, and Alicia didn’t.”



“Avery knew that 21×2 was 42, so he just added 210 and 42. Mitch added 21 at a time: $210 + 21 = 231$, then $231 + 21 = 252$.”

3 SESSION FOLLOW-UP Daily Practice



Daily Practice: For ongoing review, have students complete *Student Activity Book* page 54.



Student Math Handbook: Students and families may use *Student Math Handbook* pages 38–39 for reference and review. See pages 190–197 in the back of this unit.