

Chapter 9
Lesson 7

Dividing by Sharing

You will need

- base ten blocks

GOAL

Divide three-digit numbers by one-digit numbers using models and symbols.

Three members of a family decide to share equally the 209 free local minutes left on their cell-phone plan this month.



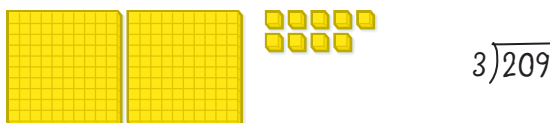
? How many minutes will each family member get?



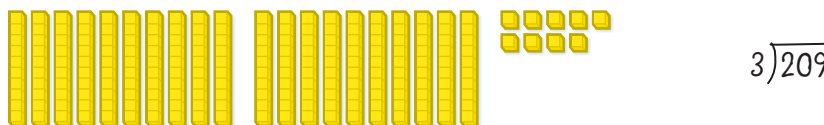
Lauren's Solution

I'll start by estimating. There are about 210 min to share. Since $210 \div 3 = 70$, each family member will get about 70 min.

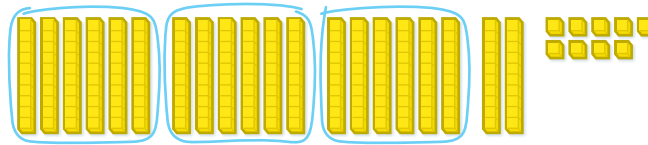
- **Step 1** I'll model 209 min with base ten blocks.



- **Step 2** I need to put the blocks in three equal groups. There aren't enough hundreds blocks to give 100 min to each family member, so I'll regroup the 2 hundreds as 20 tens.



- **Step 3** Now I can give each person 6 tens. This uses up 18 tens, or 180.

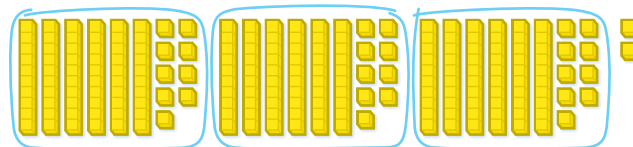


$$\begin{array}{r} 6 \\ 3 \overline{)209} \\ - 180 \\ \hline 29 \end{array}$$

- **Step 4** I can see that there are 29 min (2 tens 9 ones) left. I'll regroup these minutes as 29 ones.



Then I'll share the 29 ones.



$$\begin{array}{r} 69 \\ 3 \overline{)209} \\ - 180 \\ \hline 29 \\ - 27 \\ \hline 2 \end{array}$$

Each family member will get 69 min with 2 min left over. This is reasonable because I estimated 70 min for each family member.

Reflecting

- In Step 3, why did Lauren record the 6 tens she gave each person above the 0 and not above the 2?
- Why did Lauren subtract 180 from 209 in her recording in Step 3?
- How would Lauren have begun if there had been 309 min instead of 209 min?

Checking

1. A family of 4 has 282 cell-phone minutes to share equally.
 - a) How many minutes would each family member get? Use base ten blocks, and record the division.
 - b) Would there be any minutes left over? Explain your answer.

Practising

2. Five flags are equally spaced around the perimeter of a round 200 m racetrack. How far apart are the flags?
3. Divide using base ten blocks. Record your calculations. Sketch the block models for two of your calculations.
 - a) $7\overline{)502}$
 - b) $6\overline{)433}$
 - c) $8\overline{)817}$
 - d) $3\overline{)706}$
4. Jordan made 208 cookies for 7 families to share.
 - a) Estimate the number of cookies each family will get.
 - b) What is the exact number of cookies each family will get? How many cookies will be left over?
5. Show two ways to calculate $4\overline{)737}$.
6. Calculate.
 - a) $4\overline{)932}$
 - b) $3\overline{)473}$
 - c) $5\overline{)606}$
 - d) $7\overline{)493}$
7. Madeline baked 318 cookies for her 8 friends. Jill baked 152 cookies for her 3 friends.
 - a) Estimate to predict whether each of Madeline's friends or each of Jill's friends will have more cookies. Explain.
 - b) Calculate the number of cookies that each of Madeline's friends and each of Jill's friends will have.



8. A toy company puts a prize coupon in every 7th board game. How many prizes will there be in 500 games?



9. Ian estimated $517 \div 5$ to predict the answer to a problem. What might the problem have been?
10. One group of fishers caught 215 fish. Another group of fishers caught 317 fish. If the 2 groups share their catches equally, how many fish will each group get?
11. Heiko's school raised \$450 to donate to charities. All of the charities received the same whole-number amount, which was at least \$100. How many charities could have received a donation?
12. You divided a three-digit number by 6 and the quotient was between 50 and 60 with a remainder of 4. What could the number have been?
13. Lynne divided 607 by 6. She said the answer is 11 R1.
a) How do you think she got her answer?
b) What is the correct answer?
14. Create a problem in which you might want to estimate to check the answer to a division question.
15. Suppose you are dividing 453 by 5.
a) Why might you think of the 4 hundreds as 40 tens to help you divide?
b) Which strategy would you use to divide? Why?

Reading Strategy

Evaluating

Discuss your answers to Question 15 with a partner. Did you agree about which strategy was more appropriate?