

Working with Remainders

NCTM Standards 1, 2, 6, 7, 8, 9, 10
Common Core State Standards 4.OA.3

Lesson Planner

STUDENT OBJECTIVE

- To solve division word problems in which remainders must be interpreted

2 Teach and Practice

MATERIALS

- Ⓐ **Arranging Tiles** (TG p. 124)
- Ⓑ **Checking Division with Multiplication** (TG p. 125)
- Ⓒ **Working with Remainders** (TG p. 126)
- Ⓓ **Division Situations** (CCRG pp. CC 3–CC 4)

Added Activity

Lesson Notes

Activity D has been added to **Lesson 2.8**. Introduce Activity D after students complete Activity C.

About the Activity

In Activity D, students solve word problems involving division with remainders and decide whether to round up or ignore the remainder.

D Division Situations

whole class



20
MIN

NCTM Standards 1, 2, 6, 7, 8, 9, 10
CCSS 4.OA 3

Purpose To solve division word problems in which remainders must be interpreted

Introduce Share this problem with students:

Jorge has 200 magazines that he is recycling. He can fit 10 magazines into 1 paper recycling bag. How many recycling bags does Jorge need to fit all of his magazines?

Ask students to identify what they need to find and which operation to use. Then, prompt students to name the division sentence that you should write to solve this word problem. You may wish to write a division sentence on the board with a letter (for example r) standing for the unknown quantity: $r = 200 \div 10$. Ask a volunteer for the solution to the problem. 20 recycling bags

Task Have students solve word problems involving division with remainders.

Present the same problem to the class but change the number of magazines that Jorge has to 119. Ask students to tell you what they need to do to solve this problem. Divide 119 by 10. On the board, write and solve this division problem with the class.

$$\begin{array}{r} 11 \\ 10 \overline{)119} \\ \underline{110} \\ 9 \end{array}$$



Talk Math

- ? How is this problem different from the original? There is a remainder in this problem.
- ? What does the remainder mean? Jorge can fit his magazines in 11 bags but there will be 9 magazines left over.
- ? What must Jorge do to fit all of his magazines? He must use another bag.
- ? How many bags does Jorge need? 12
- ? What do you do with the remainder in this problem? Explain. You round up. Jorge needs 1 more recycling bag to fit all his magazines.

Share another division word problem with students:

How many 2-foot banners can be made from a ribbon that is 15-feet long?

Ask students to describe the division sentence that you can write to solve this word problem. You may wish to write this sentence on the board with a letter standing for the unknown quantity: $15 \div 2 = b$. On the board, write the division sentence that students suggest as a long-division problem.

$$\begin{array}{r} 7 \\ 2 \overline{)15} \\ \underline{14} \\ 1 \end{array}$$



Talk Math Discuss with students what to do with the remainder in this situation.

- ❓ What does the remainder mean in this situation? There is 1 foot of ribbon left over.
- ❓ Can you make another banner? Why or why not? No. You need 2 feet of ribbon to make another banner.
- ❓ How many banners can be made? 7
- ❓ What do you do with the remainder in this problem? Explain. You ignore the remainder. You can't make another banner with the ribbon left over.

Extend Discuss other division situations where you have to decide what to do with a remainder. You might provide a context for the problems on the LAB pages. For example, you might use the numbers from Problem 4 and write a problem such as the following.

Ten of the team's soccer players need a ride to practice. If 4 players can fit in each car, how many cars will be needed?

