

LESSON 3

Objective

Use place value to round decimals.

Common Core State Standards

- **5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
- **5.NBT.4** Use place value understanding to round decimals to any place.

Number and Operations in Base Ten

Rounding Decimals

Students need a solid understanding of place value to round decimals correctly. Using concrete models that represent tenths, hundredths, and thousandths helps them build this understanding. This lesson will reinforce students' knowledge of place value and help them focus on rounding to the desired place.

Try It! Perform the Try It! activity on the next page.

Talk About It

Discuss the Try It! activity.

- Write 0.259 on the board and review the place value of each digit. **Ask:** Which digit do we look at when rounding to the hundredths place? Underline the 9. **Ask:** Which of our Base Ten Blocks represent the thousandths place?
- **Ask:** Which digit do we look at when rounding to the tenths place? Underline the 5. **Ask:** Which of our Base Ten Blocks represent the hundredths place?
- Suggest students draw an arrow to the digit they are rounding to.

Solve It

Reread the problem with students. Make sure they understand that the problem is asking for two separate answers. Remind them to look only at the digit to the immediate right of the place they are rounding to. Have students write sentences explaining the answers.

More Ideas

For other ways to teach about rounding decimals—

- Have pairs make up their own decimals to round and challenge each other. Make sure they are rounding to a variety of place values.
- Have students use the Folding Number Line to round decimals.

Formative Assessment

Have students try the following problem.

What is 24.462 rounded to the nearest tenth?

- A. 24.4 B. 24.46 C. 24.5 D. 25

Try It! 15 minutes | Groups of 4

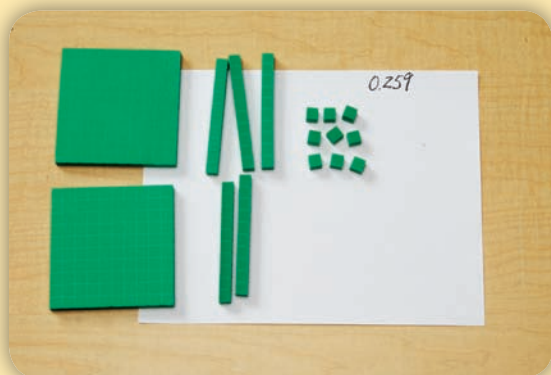
Here is a problem about rounding decimals.

Alvin's model airplane has wheels that are 0.259 inch wide. He wants to compare the wheels to some wheels he sees in a catalog. He needs to round the width to the nearest hundredth of an inch and to the nearest tenth of an inch. Can you help?

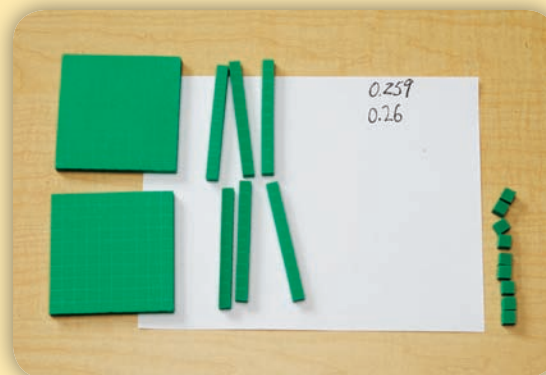
Introduce the problem. Then have students do the activity to solve the problem. Distribute Base Ten Blocks, paper, and pencils to students.

Materials

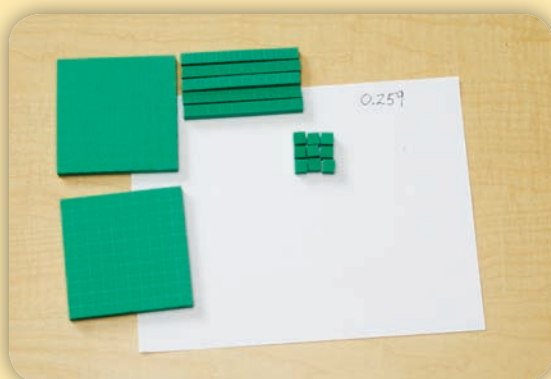
- Base Ten Blocks
- paper (1 sheet per group)
- pencils (1 per group)



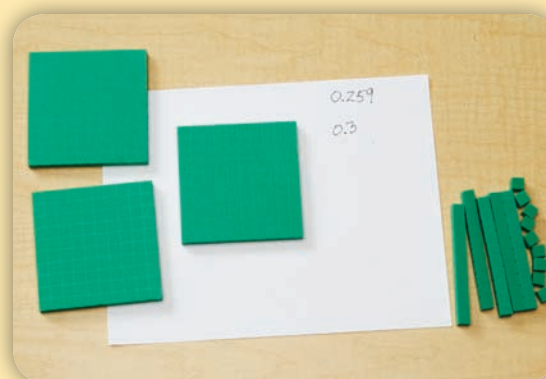
1. Have students write the decimal 0.259 and model it with Base Ten Blocks. Remind students that the large cube represents one whole. If necessary, guide students to use 2 flats, 5 rods, and 9 units. **Ask:** What digit is in the tenths place? Hundredths place? Thousandths place?



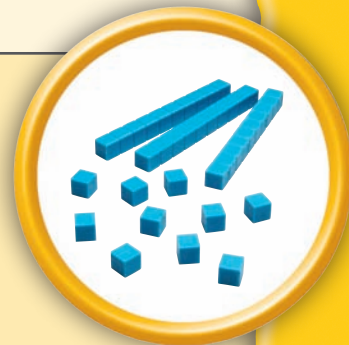
2. **Say:** Let's round to the nearest hundredth. **Ask:** What should we do with the thousandths? Have students line up the 9 units alongside one of the rods. **Ask:** Are the units few enough to just remove them, or is it better to replace them with a rod? Elicit that since 9 is closer to 10 than to 0, it makes more sense to replace the 9 units with a rod. Have students write the result, 0.26.



3. Have students write and build 0.259 again. **Say:** Let's round to the nearest tenth. Have students match up the 5 rods with 5 rows of one of the flats. Elicit that the 5 rods are exactly half of a flat so it's not clear whether the rods should be rounded up to another whole flat.



4. Tell students that by general agreement we round up when the place to the immediate right is 5. You can point out that the 9 thousandths tip the balance but that they would round up even if there were no thousandths. Have them replace the rods and units with a flat and write the result, 0.3.

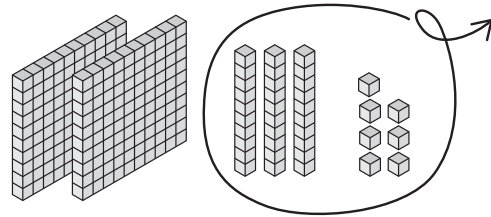
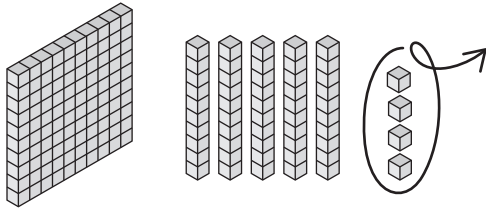


Use Base Ten Blocks to build the model. Round the decimal to the specified place.

(Check students' work.)

1. Round 0.154 to the nearest hundredth: 0.15

2. Round 0.237 to the nearest tenth: 0.2



Using Base Ten Blocks, model the number and round to the specified place. Sketch the model.

(Check students' models.)

3. Round 0.357 to the nearest tenth: 0.4

4. Round 0.089 to the nearest hundredth: 0.09

Round to the nearest tenth.

5. 0.099 0.1

6. 0.825 0.8

7. 0.111 0.1

Round to the nearest hundredth.

8. 0.673 0.67

9. 0.176 0.18

10. 0.099 0.10

Answer Key

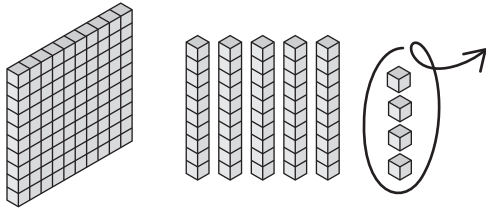
Challenge! Clyde and Leah want to combine their money. They have no paper, pencils, or calculators, so they solve the problem mentally by rounding. Clyde has \$2.68 and Leah has \$3.49. Clyde rounds both amounts to the nearest dollar and then adds them. Leah rounds the amounts to the nearest ten cents and adds them. Which rounding attempt most accurately describes their combined total?

Challenge: (Sample) Clyde's attempt rounded to \$6.00, and Leah's rounded to \$6.20. Leah's rounding attempt more accurately describes the actual combined total of \$6.17.

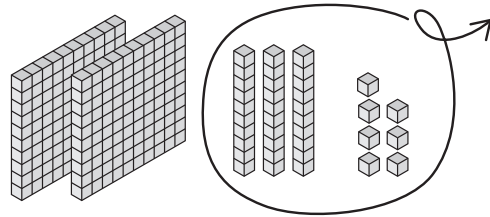
This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Use Base Ten Blocks to build the model. Round the decimal to the specified place.

1. Round 0.154 to the nearest hundredth: _____



2. Round 0.237 to the nearest tenth: _____



Using Base Ten Blocks, model the number and round to the specified place. Sketch the model.

3. Round 0.357 to the nearest tenth: _____

4. Round 0.089 to the nearest hundredth: _____

Round to the nearest tenth.

5. 0.099 _____ 6. 0.825 _____ 7. 0.111 _____

Round to the nearest hundredth.

8. 0.673 _____ 9. 0.176 _____ 10. 0.099 _____

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