Decimal Round-Up/Round-Down

Reporting Category Number and Number Sense

Topic Rounding decimals

Primary SOL 5.1 The student, given a decimal through thousandths, will round to the nearest whole number, tenth, or hundredth.

Materials

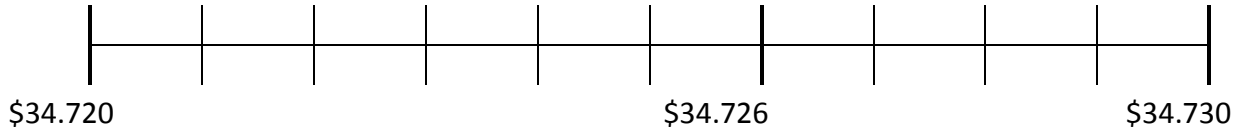
- Ten-sided number generators (or decks of cards with face cards removed)
- Decimal Round-Up/Round-Down activity sheet (attached)

Vocabulary

decimal, tenth, hundredth, thousandth, rounding

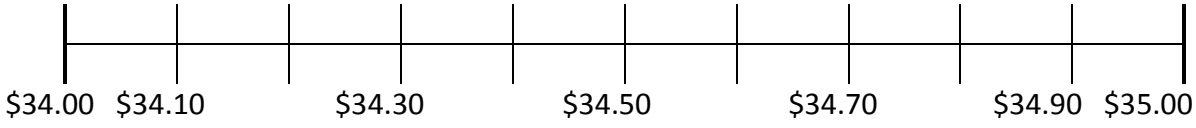
Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Display a decimal in the thousandths place, such as 34.726. Ask a volunteer to read the number, using place-value names. Lead a review discussion of decimal place values, asking questions such as, "What place is the 2 in? How about the 6? The 7?"
2. Ask, "If this were a monetary amount, $34.726, how would we determine the amount to the nearest cent?" Guide students to recall that the nearest cent is the same as the nearest hundredth of a dollar. This can be displayed on a number line:



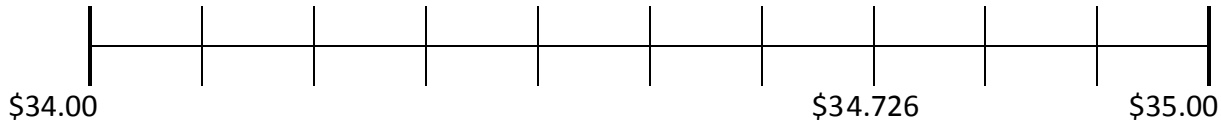
Ask, "What digit is in the hundredths place?" Underline the 2: $34.72̲6. Students can see that on the number line, $34.726 is closer to $34.730 than to $34.720. Therefore, $34.726 rounds to $34.730, or $34.73. Guide students to look at the thousandths place. Because the digit 6 is equal to or greater than 5, then the hundredths digit, 2, would be rounded up to 3. Thus, $34.726 rounds to $34.73.

3. Follow the same process to round the number to the nearest tenth. First, ask students how this might be shown on a number line, with the endpoints being $34.00 and $35.00.



Which amount to the nearest tenth is $34.726 closest to? Students may underline the numeral in the tenths place (e.g.; $34.7̲26) if they need help focusing on the place value for rounding.

4. Ask students to explain how to round to the tenths place. Direct students to the hundredths place, and they should notice that the 2 is less than 5, and thus, the digit in the tenths place, 7, remains the same. Thus, 34.726 rounded to the nearest tenth is 34.7.
5. Finally, round 34.726 to the nearest whole. (It might be helpful to think of this as rounding $34.726 to the nearest dollar.)
   Students may underline the numeral in the ones place (e.g.; $3<u>4</u>.726) if they need help focusing on the place value for rounding.
6. Which whole dollar amount is $34.726 closest to?



7. Look at the tenths place. Since 7 is greater than or equal to 5, the 4 in the ones place rounds to 5. Rounded to the nearest whole number, 34.726 is 35.
8. Distribute number generators or cards and copies of the Decimal Round-Up/Round-Down activity sheet to students. Demonstrate rolling a die or drawing cards to create a decimal, filling in #1 on a sample activity sheet displayed for the class. Demonstrate rounding this number to the nearest hundredth, tenth, and whole.
9. Allow students to complete the activity, working independently or in pairs. Circulate around the classroom to check for understanding.

Assessment

- **Questions**
  - Why do we need to round numbers? What is a situation that would require rounding?
  - What are some other ways we can estimate?
- **Journal/Writing Prompts**
  - Your friend needs help rounding 12.345 to the nearest hundredth, tenth, and whole. Write an explanation of how to do this that he or she can follow.
  - Explain how rounding a decimal is similar to and different from rounding a whole number.
- **Other**
  - Assess the Decimal Round-Up/Round-Down activity sheets.
  - Have students demonstrate rounding a decimal, using an open number line.
  - Have students model rounding a decimal, using Base-10 pieces or paper models.

Extensions and Connections (for all students)

- Have students play a game using the Decimal Round-Up/Round-Down activity sheet. Award points for the largest or smallest decimals rolled.
- Have students connect rounding decimals to the process of rounding whole numbers, which they learned in fourth grade, and discuss how they are similar and different.
- Have students connect rounding decimals to making change, and lead students in rounding the amount of change received from various purchases.

- Direct students to use estimation in multistep money problems. For example, given the prices of three items, have students estimate by rounding each price to the nearest dollar whether they would have enough money to purchase all three items with a $20 bill.

Strategies for Differentiation

- Allow students to work in pairs to complete the activity.
- Discuss equivalent decimals (e.g., 3.40 and 3.4).

Decimal Round-Up/Round-Down

Name _____ **Date** _____

For each item below, roll a number generator (or draw a card) enough times to fill in each blank to create a decimal number. Then round each decimal number to the nearest hundredth, tenth, and whole.

1. Roll or draw a card 4 times: ___ . ___ ___ ___

   Nearest hundredth ___ . ___ ___ Nearest tenth ___ . ___ Nearest whole ___

2. Roll or draw a card 4 times: ___ . ___ ___ ___

   Nearest hundredth ___ . ___ ___ Nearest tenth ___ . ___ Nearest whole ___

3. Roll or draw a card 4 times: ___ . ___ ___ ___

   Nearest hundredth ___ ___ . ___ ___ Nearest tenth ___ ___ . ___ Nearest whole ___ ___

4. Roll or draw a card 4 times: ___ ___ . ___ ___ ___

   Nearest hundredth___ ___ . ___ ___ Nearest tenth ___ ___ . ___ Nearest whole ___ ___

5. Roll or draw a card 5 times: ___ ___ . ___ ___ ___

   Nearest hundredth ___ ___ . ___ ___ Nearest tenth ___ ___ . ___ Nearest whole ___ ___

6. Roll or draw a card 5 times: ___ . ___ ___ ___

   Nearest hundredth ___ . ___ ___ Nearest tenth ___ . ___ Nearest whole ___

7. Roll or draw a card 5 times: ___ ___ . ___ ___ ___

   Nearest hundredth___ ___ . ___ ___ Nearest tenth ___ ___ . ___ Nearest whole ___ ___

8. Roll or draw a card 5 times: ___ ___ . ___ ___ ___

   Nearest hundredth___ ___ . ___ ___ Nearest tenth ___ ___ . ___ Nearest whole ___ ___