

Practical Problems Involving Decimals

Strand:	Computation and Estimation
Topic:	Solving practical problems involving decimals
Primary SOL:	6.5 The student will c) solve multistep practical problems involving addition, subtraction, multiplication, and division of decimals.

Materials

- Newspaper and/or magazine ads
- Shopping list
- Chart paper
- Markers
- Practical Problems Involving Decimals activity sheet (attached)

Vocabulary

decimal, estimate (earlier grades)
budget (6.7)

Student/Teacher Actions: What should students be doing? What should teachers be doing?

Before the lesson, create a shopping list based on products advertised in newspapers and/or magazines. Include multiple quantities of various items so that students will have to adjust the money spent on a few of the items. Save the ads for use during the lesson. It is important that each of the items on the shopping list be found in more than one ad so students will have to make shopping decisions.

1. Ask students to think about how decimals are used in real life. Have them share their responses and write them on a chart. If no one mentions money, add it to the list. Lead a discussion about the importance of knowing how to budget money. Ask students to describe instances of their parents working on budgets. Encourage students to share their personal experiences about times they had money and had to plan how they would spend or save it. Ask them what they do when they want to make a big purchase and do not have enough money. Tell students that they will be using their budgeting skills later in the lesson to go shopping.
2. Ask students to define *estimation* in their own words. Have students share their responses and with a partner discuss the role of estimation in solving problems. Have them share their thoughts. Explain that estimation can yield a reasonable solution to a problem when an exact answer is not required. If an exact answer is required, estimation still provides a way to judge whether the calculated answer is reasonable. Give a variety of scenarios, and for each, ask students whether they would need to give an exact answer or an estimate (example scenario: the number of people attending a sporting event, such as a football game.)
3. Place students into groups of two to four. Give each group a copy of the shopping list and copies of the shopping ads. Tell each group how much money they will have to do their

- shopping. Ask students to think about how they might use estimation when doing their shopping. Allow groups time to discuss this, and then have them share their thoughts.
4. Instruct students to “go shopping” using the ads to purchase each item on the shopping list. Their purchases must meet their budget restrictions (i.e., they may not spend more than they have, etc.) Challenge students to find the best deals when shopping. Have students keep a list of their purchases and record the value of their money as they go.
 5. Advise the groups that if they find a purchase they cannot fit into their budget, they may consult with another group to purchase the item together. The groups must decide how to “share” their cost and record it correctly.
 6. Bring the whole class back together and have students share the purchasing decisions they made. Have them discuss how they made their choices and when they had the most difficulty in finalizing their choices. Have the class decide which group found the best deals while shopping. Ask students to discuss how decimals and estimation played a role in their shopping. Review situations in which decimals are needed in real life.
 7. Distribute the Practical Problems Involving Decimals activity sheet, and have each student complete it. Have students solve other problems involving decimals that are used in real life. Make sure students record their estimates before solving.
 8. Bring the whole class together to share responses and strategies used to solve these practical problems involving decimals. Discuss how estimation played a role in their problem solving. Revisit the chart showing real-life uses of decimals, and add any situations from the handout not mentioned earlier.

Assessment

- **Questions**
 - Where do you commonly use decimals in real life?
 - Why are decimals important to us?
 - What role does estimation play in solving problems?
 - Is an exact answer always the best answer? Why or why not?
 - How do you know your answer is correct?
- **Journal/Writing Prompts**
 - Describe ways decimals are used in real life.
 - Explain why it is important to be able to solve problems involving decimals.
 - Describe the role estimation plays in solving problems.
- **Other Assessments**
 - Use the records from the shopping activity as a group assessment.
 - Have students create a real-life situation involving decimals and a practical problem that would need to be solved.

Extensions and Connections

- Include discount coupons and the calculation of tax in the shopping activity.
- Have students create a game board with squares that require purchase decisions. Their ability to purchase will depend on the budget they create. Have them determine what it takes to “win.”

Mathematics Instructional Plan – Grade 6

- Have students create problems using the real-life situations listed on the chart paper.
- Have students interview their parents about how they use decimals in their lives.
- Have students interview their parents about how they construct their family budget.
- Invite the school cafeteria manager to talk to the class about how he/she plans for and purchases the appropriate amount of food for school breakfasts and lunches.

Strategies for Differentiation

- Provide students with calculators to use throughout the lesson.
- Provide students with coins and bills to use while shopping.
- After students have had time to independently solve some of the Practical Problems Involving Decimals activity sheet, have them discuss their problem-solving process with a partner. If they do not agree on a solution, let them consult another team to talk through the solution together.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

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Practical Problems Involving Decimals

Name _____ Date _____

1. Joseph runs each morning before school. On Monday, he ran 1.34 miles. On Tuesday, he ran 2.456 miles. On Wednesday, he ran 2.5 miles. On Thursday, he ran 0.375 miles. On Friday, he ran 0.25 miles. His goal for the week was to run 10 miles. Did Joseph meet his running goal for the week? How do the miles he ran compare to his goal? Explain your thinking.

Estimate:
Show your thinking.

2. Sarah and three of her classmates entered a story they wrote into a contest at the mall. The team won the contest, and they received a cash prize. Each person on the team received \$21.25. How much money did the team win altogether? Explain your thinking.

Estimate:
Show your thinking.

3. Bobby bought the following items at the school store: 10 pencils for \$0.21 each, eight pens for \$0.45 each, and two posters for \$0.55 each. How much money did Bobby spend in all? Explain your thinking.

Estimate:
Show your thinking.

4. Betsy made ribbons for school spirit day. Her roll of ribbon was 30 feet long. For each individual ribbon, she needed 0.625 feet. How many ribbons could she make from her roll? Explain your thinking.

Estimate:
Show your thinking.

5. A 5K is 3.1 miles. A cross-country runner runs 3.5 miles on Monday, 4 miles on Wednesday and 1.8 miles on Friday. How many 5Ks did the runner complete this week? Explain your thinking.

Estimate:
Show your thinking.