Practical Problems – Tax and Discounts

STRAND: Computation and Estimation

STRAND CONCEPT: Practical Applications-Rational Numbers and Proportional Reasoning

SOL 7.3, 8.4

Remediation Plan Summary

Students solve practical problems, using computational procedures for percents, ratios, and proportions.

Common Misconceptions

- Students may mix up the whole and the part when trying to write the proportion for the word problem.
- Students may incorrectly reverse the numerator and denominator in the ratios used to solve proportions. Encourage students to label the units.
- Students may incorrectly list the discount or tax as the price.
- Students may add the discount instead of subtracting it from the original price. Students may subtract sales tax instead of adding it to the original cost.

Materials

- Newspaper ads and/or brochures for items on sale
- Shopping Spree recording sheet
- Scientific calculators
- Exit Ticket: Smart Shopper

Introductory Activity

How can you "figure out" how much something will cost if it is advertised at 50% off, 25% off, or 30% off? Have them share their ideas with the class. If no one talks about money, suggest that they can calculate savings by focusing on how much is saved per dollar. For example, $25\% = \dfrac{25}{100}$, so it is the same as *saving 25 cents on every dollar.* Therefore, to find the sale price of a $10 item on sale at 25% off, it may be easier to multiply 10 times 25 cents to find the amount of the discount $(\$10 \times \$.25 \ = \ \$2.50)$ and then subtract the discount from the original price.

How might you estimate Virginia sales tax when they are in a store to ensure they have enough money for your purchase? Students should be able to explain that it will be close to 5 cents for every dollar because the tax rate in Virginia is 4.5% on most items.

The purpose of this lesson is to allow students to "see" how percents are used in different ways each day.

Plan for Instruction

1. Remind students that proportions are one way to solve problems involving discounts and sales tax.

   - Display this proportion: $\dfrac{\%\ of\ discount}{100} = \dfrac{amount\ saved}{original\ price}$. Once the proportion has been solved, the sale price is found by subtracting the amount saved from the original price.

   - Display this proportion: $\dfrac{\%\ of\ sales\ tax}{100} = \dfrac{amount\ of\ tax}{\cos t\ of\ item}$. Once the proportion has been solved, the total spent is found by adding the amount of tax to the cost of the item.

2. Discuss the importance of being an informed consumer. Then distribute the "Shop until You Spend Most All of It" recording sheet and newspaper ads and/or brochures advertising a sale. Alternatively, you could ask students to bring in ads. Review the instructions with the students before they begin the activity.

3. Have a class discussion about these tasks, asking students to compare them to the tasks involved in real-life shopping.

Pulling It All Together

Exit Ticket: Have students complete the Exit Ticket: Smart Shopper.

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

Virginia Department of Education 2018

Name:

Shopping Spree

You have $500 to spend at *one* store. You must buy at least six items and receive no more than $10.00 in change. You must also produce an itemized receipt for your purchase. The items you buy should be chosen from an ad or sale brochure that you will include in your project.

1.   Complete the table below, which will serve as your itemized receipt. You must list at least six items. If you want to list more than 10 items, ask for an additional table.

2.   Compute your total savings—the difference between sum of the original prices and the sum of the sale prices (before tax).

3.   Compute the amount of Virginia sales tax (4.5%) on your total purchases, and record it.

4.   Compute the amount you owe at the checkout, and record it.

4.   Compute the amount of change you would receive from your $500.00. Remember, this can be no more than $10.00.

5.   Include the ad or sale brochure you used for the items and prices.

Itemized Bill

Item Name	Original Price	Sale Discount		Sale Price
		%	**Amount**	
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
TOTAL				
Amount of Virginia sales tax on your total purchases:				
Amount you owe at the checkout:				
Amount of change received:				

Exit Ticket: Smart Shopper

You are shopping for a new television and want to get the best deal. Based upon the information below, which store has a better deal on the television and explain your reasoning.

TV's R Us	Regular Price: $849.99	Electronic Superstore	Regular Price: $899.99
	15% off the regular price Plus take an extra 10% off the sale price		Discount: 25%