

Teaching Problem | What Would You Do?

Auto Rental Deals**Teaching Goal**

After participating in this lesson, students will be able to use a number of tools such as their experiences, prior knowledge, and individual preferences to solve the problem. Students will also be able to support their answers using logic and reasoning.

Problem

Mrs. Lamont needs to rent a car for two days while her car is being repaired. She plans to drive less than 100 miles. She is considering these three ads in the local newspaper:

Ad 1	Ad 2	Ad 3
New Compact Rentals	New Car Rentals	Used Car Rentals
\$30 a day	\$35 a day	\$28.00 a day
\$0.15 per mile	First 50 miles free \$0.12 each additional mile	\$0.22 per mile

Teaching Plan

1. Present the problem to the students.
2. Have the students read the problem.
3. Lead a whole-group discussion. Consider using the following questions as part of the discussion:

What information given in the problem can help Mrs. Lamont choose which is the best rental deal? The rental car is needed for two days only and will be driven 100 miles or less.

Section **3** What Would You Do?

If she drives exactly 100 miles, how much would she pay with each plan?

Which is the best deal? For two days and 100 miles, ad 1 would be \$75.00, ad 2 would be \$76.00, and ad 3 would be \$78.00. Ad 1 gives the best deal for 100 miles.

However, the problem states that she plans to drive less than 100 miles. If she drives 80 miles, what is the best deal? How about 60 miles? 40 miles? 20 miles? For 80 miles, ad 1 would be \$72.00, ad 2 would be \$73.60, and ad 3 would be \$73.60 making ad 1 the best deal again. For 60 miles, ad 1 is still the better deal, but for 20 and 40 miles ad 3 is the better deal.

If Mrs. Lamont finds a coupon for New Car Rentals (ad 2) that doubles the number of free miles, when would it make sense for her to rent the car from them? It would make sense to take the ad 2 deal if she drives over 67 miles and the ad 1 deal if she drives less than 67 miles.

Are there other considerations (other than cost) that might influence Mrs. Lamont's decision about which car to rent?

Since some of the cost differences are less than \$5.00, Mrs. Lamont may want to choose the one that is the most convenient to get to, the one closest to her job, the one where her nephew works, or the one that opens earliest because she starts work very early.

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Since the problems in this section are somewhat open-ended, there may be a variety of strategies and solutions. It is important to encourage the students to choose a solution that they can defend.

Problem 2 Cash or Credit?

Two stores in town sell the same brand big screen television set for \$2,400.00. At the first store, a customer can either pay the full price in cash or pay \$400.00 down and then pay \$220.00 per month for 10 months. At the second store, a customer can choose between paying full price in cash or making 12 monthly payments of \$240.00 each.

- 1. Compare the different plans using a table or chart and show the total cost of each plan.

- 2. Explain why someone might choose each plan.

Teaching Problem | **What's Missing?**

Fish Aquarium

Teaching Goal

After participating in this lesson, students should be able to identify the missing piece of information that is preventing them from solving the problem. They should also be able to choose a number or other data that will enable them to solve the problem. They should understand that there is a range of possible numbers or data that could be used to solve the problem.

Problem

The Science Club has \$40.00 to spend on their tropical fish aquarium. They spend 25% of their money on fish food and 50% of what was left on fish. The rest of the money was spent on plants and a new filter. How much money was spent on each item?

Teaching Plan

- 1.** Write the problem on the overhead projector, chalkboard, or whiteboard.
- 2.** Have the students read the problem.
- 3.** Lead a discussion with the whole class using the following questions as part of the discussion.

What question is being asked? How much money was spent on each of four items?

What are the four items? Fish food, fish, plants, filter

Section **5** What's Missing?

What information do you know from the problem? The club had \$40.00 to spend. They spent 25% on fish food. They spent 50% of what they had left over on fish. They used the rest of the money to buy plants and a filter.

How can you find the amount of money they spent on fish food? Find 25% of \$40.00.

What is 25% of \$40.00? \$10.00

What do you know about the amount of money the Science Club spent on fish? They spent 50% of what was left over after they had purchased fish food.

How much money did they have left over after they had purchased fish food? \$30.00

What is 50% of \$30.00? \$15.00

How much did they spend on the plants? You can't tell from the problem. The information is missing.

How much did the Science Club spend on the filter? The information is missing.

Could you figure out how much was spent on the filter if you knew how much was spent on the plants? Yes

Pick an amount that might have been spent on plants. \$7.00

Now how much was spent on the filter? \$8.00

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Repeat above procedure substituting different numbers for either the amount spent on plants or for the amount spent on the filter. Students should be able to see that the problem can be solved if they know either one of those.

Problem 6 The Marbles

Felipe's teacher placed 24 marbles in a bag. Half of the marbles were green. The rest were either red or blue. Felipe reached into the bag and pulled out a marble. What is the probability that the marble Felipe picked out of the bag was blue? Compare the different plans using a table or chart and show the total cost of each plan.



1. What is the question? _____

2. What information do you know from the problem? _____

3. What else do you need to know to solve the problem? _____

4. Pick a reasonable number for the missing information you need.

5. What is the probability that the marble Felipe picked from the bag was blue? _____
