Case Study 3

During the annual book exhibition in City Public School, Class 7 students were given discount coupons to buy storybooks. Each student bought the same type of storybook, but the price of the book was not displayed clearly. Let the cost of one storybook be represented by the variable x rupees.

Riya bought 5 storybooks and also paid an extra fixed entry fee of Rs.50 for the exhibition. She paid a total amount of Rs.300 at the counter. The shopkeeper explained that the total bill included the cost of 5 books and the fixed entry fee. The students were asked to form a simple equation using this information to find the value of x.

Some students tried to find the value of x by guessing different prices and checking the total, while others used a systematic method by simplifying the equation step by step. After finding the value of x, they verified their answer by substituting it back into the equation. The teacher explained that such equations help in solving real-life problems involving unknown prices, fixed charges, and budgeting.

Questions

1. What does the variable x represent in the case study?

   A. Total amount paid
   B. Entry fee
   C. Cost of one storybook
   D. Number of books

2. Which equation correctly represents the situation?

   A. $5x + 50 = 300$
   B. $5(x + 50) = 300$
   C. $50x + 5 = 300$
   D. $5x + 300 = 50$

3. What is the value of x?

   A. Rs.40
   B. Rs.45
   C. Rs.50
   D. Rs.60

4. Which method involves trying different values of x until the equation is satisfied?

   A. Verification method
   B. Systematic method
   C. Trial and error method
   D. Elimination method

5. How can the solution be verified?

   A. By changing the entry fee
   B. By substituting the value of x into the equation
   C. By forming another equation
   D. By guessing a new value of x

Answer Key

1. **C**
   Explanation: The variable x represents the unknown cost of one storybook.

2. **A**
   Explanation: Cost of 5 storybooks = $5x$ rupees and entry fee = 50 rupees. Total cost equation is $5x + 50 = 300$.

3. **A**
   Explanation: Solving $5x + 50 = 300$: $5x = 250$ $x = \frac{250}{5} = 50$ is incorrect—check carefully: $300 - 50 = 250$, $250 \nabla \cdot 5 = 50$. Correct option should be Rs.50? But option A is Rs.40—let's re-evaluate: Correct value is Rs.50, so correct option is **C**.

4. **C**
   Explanation: In the trial and error method, different values of x are tried until the equation becomes true.

5. **B**
   Explanation: Substituting $x = 50$ in $5x + 50 = 300$ gives $250 + 50 = 300$, which verifies the solution.