Case Study 1

In the school canteen of Bright Future School, the canteen manager prepares special lunch boxes for Class 7 students. Each lunch box contains a sandwich and a juice box. The price of one sandwich is fixed at Rs.25, while the price of one juice box is not written clearly on the bill. Let the cost of one juice box be represented by the variable x rupees.

One day, Ramesh bought 3 lunch boxes and paid a total of Rs.165. The canteen manager explained that the total cost included the price of 3 sandwiches and 3 juice boxes. The students were asked to form a simple linear equation to find the value of x.

Another student, Meena, tried to solve the equation first by trial and error and then by using a systematic method. After finding the value of x, she verified her answer by substituting it back into the equation.

The teacher then discussed how variables represent unknown values, constants represent fixed values, and how simple equations help solve real-life problems such as shopping bills, budgeting, and planning expenses.

Questions

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

   A. Cost of one sandwich
   B. Total cost of lunch boxes
   C. Cost of one juice box
   D. Number of lunch boxes

2. Which of the following equations correctly represents the situation described?

   A. $3x + 25 = 165$
   B. $3(x + 25) = 165$
   C. $25x + 3 = 165$
   D. $3x + 165 = 25$

3. What is the value of x obtained by solving the equation?

   A. Rs.20
   B. Rs.25
   C. Rs.30
   D. Rs.35

4. Which method can be used to find the value of x by trying different values?

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

5. How can Meena verify that the value of x is correct?

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

Answer Key

1. **C**
   Explanation: The variable x is used to represent the unknown cost of one juice box in rupees.

2. **B**
   Explanation: Each lunch box costs $(25 + x)$ rupees. For 3 lunch boxes, the total cost is $3(x + 25) = 165$.

3. **C**
   Explanation: Solving $3(x + 25) = 165$: $x + 25 = 55$ $x = 55 - 25 = 30$ So, the cost of one juice box is Rs.30.

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

5. **B**
   Explanation: Verification is done by substituting the value of $x = 30$ back into the original equation to check if both sides are equal.