Rules for Solving Linear Equations in One Variable

A. Choose the Correct Answer:

1. If we add the same number to both sides of an equation, the solution:

a) Changes
b) Remains the same
c) Doubles
d) Becomes Zero

2. If we subtract the same number from both sides of an equation, the balance of the equation:

a) Breaks
b) Remains unchanged
c) Reverses
d) Becomes half

3. To solve 2x – 5 = 9, the first step is:

a) Add 5 to both sides
b) Subtract 5 from both sides
c) Multiply both sides by 2
d) Divide both sides by 2

4. If 4x = 12, to solve for x, we should:

a) Add 4 to both sides
b) Subtract 4 from both sides
c) Multiply both sides by 4
d) Divide both sides by 4

5. The first rule of solving a linear equation is:

a) Multiply different numbers on both sides
b) Perform same operation on both sides
c) Only add numbers
d) Only subtract numbers

B. Write the Missing Terms to Complete the Sentences:

1. Adding or subtracting the same number from both sides of an equation _____ the balance
2. Multiplying or dividing both sides of an equation by the same non–zero number _____ the solution
3. To isolate the variable, we _____ the same number on both sides
4. When solving equations, we perform _____ operations on both sides
5. Division by _____ is not allowed in solving equations

C. Figure out the answers to these questions:

1. Solve 5x + 2 = 17 using proper steps
2. Solve $\frac{x-4}{3} = 5$ using the rules of solving equations
3. Solve 2(x + 3) = 4x – 6

4. Solve $7x - 5 = 2x + 10$

5. Solve $\frac{3x - 2}{4} = \frac{x + 1}{2}$

D. Mark each sentence with a True (✓) or False (✗):

1. You can perform different operations on both sides of an equation. _____
2. Multiplying both sides of an equation by the same non–zero number keeps the equality. _____
3. Dividing both sides of an equation by 0 is allowed. _____
4. The goal of solving an equation is to isolate the variable. _____
5. In a linear equation, it is necessary to maintain the balance after every operation. _____

E. Challenge yourself with these questions:

1. Solve $\frac{2x + 5}{3} = \frac{x - 2}{2}$
2. Solve $6x - 7 = 3x + 5$
3. Solve $4(x - 2) = 2(x + 6)$
4. Solve $8x + 3 = 5x - 12$
5. Solve $\frac{3x - 1}{5} = \frac{2x + 4}{3}$