Systematic Method for solving an equation

Trial and error method is not a direct and practical way for finding a solution. We shall now look for a direct way of solving an equation i.e., finding the solution of the equation.

We have to follow the following steps to solve an equation by the method of transposition

Step 1: Add the same number or quantity to each side of the equation without upsetting the balance of the equation.

Step 2: Subtract the same number or quantity from each side of the equation without upsetting the balance of the equation.

Step 3: Transfer any number or quantity from one side of the equation to the other side by changing its sign i.e., + to – or – to +.

Step 4: Multiply or divide both sides of the equation by the same number or quantity without upsetting the balance of the equation.

Step 5: Transfer the numerical coefficient of any quantity at L.H.S. to R.H.S as its denominator whereas the denominator of the L.H.S gets transposed to R.H.S as its numerator.

Let us understand with some examples:

Example: Solve $x + 8 = 15$

Solution: Adding – 8 to both the sides, we get

$x + 8 – 8 = 15 – 8$ or $x = 7$

$x = 7$ is the required solution.

Example: If 7x = 42 then find the value of x.

Solution: To find the value of x, eliminate its numerical coefficient of 7 by multiplying both the sides of the equation by $\frac{1}{7}$.

So, $7 \times x \times \frac{1}{7} = 42 \times \frac{1}{7}$ or $x \times 1 = 6 \times 1$ or $x = 6$

Hence, $x = 6$ is the solution of the equation $7x = 42$.