Rules for Solving Linear Equations in One Variable

Understanding of Rules for Solving Linear Equations in One Variable

- Solving a linear equation in one variable means finding the value of the variable that satisfies the given equation.
- Certain rules must be followed to solve such equations systematically and accurately.
- These rules ensure that the equality of the equation is always maintained.

Important Points

- Same number can be added or subtracted from both sides of the equation.
- Both sides can be multiplied or divided by the same non–zero number.
- Move all variable terms to one side and constant terms to the other side.
- Simplify both sides by removing brackets and combining like terms.
- Check the solution by substituting it back into the original equation.

Examples with Solutions

Example: Adding/Subtracting Same Number

➢ **Solve: x – 4 = 10.**

Solution: Add 4 on both sides

x = 10 + 4

x = 14

Example: Multiplying/Dividing Both Sides

➢ **Solve: 5x = 30.**

Solution: Divide both sides by 5

$x = \frac{30}{5}$

x = 6

Example: Variable on Both Sides

➢ **Solve: 3x + 7 = 2x + 12.**

Solution: Move variable terms to one side and constants to the other

3x – 2x = 12 – 7

x = 5

Example: Removing Brackets First

➢ **Solve: 2(x + 3) = 14.**

Solution: Expand bracket

2x + 6 = 14

2x = 14 – 6

2x = 8

$x = \frac{8}{2}$

x = 4

Example: Involving Fractions

➢ **Solve: $\frac{x}{3}$ + 2 = 5.**

Solution: Subtract 2 from both sides

$\frac{x}{3} = 3$

Multiply both sides by 3

x = 9

Summary Points

- Always perform the same operation on both sides to keep equation balanced.
- Bring variable terms together and constants together.
- Simplify expressions before solving.
- Solve for the variable step–by–step.
- Always check your answer by substituting into the original equation.