1. Solve the inequation $3x - 11 < 3$, where $x \in \{1, 2, 3, \ldots, 10\}$. Also represent its solution on a number line.
2. Solve $2(x - 3) < 1$, $x \in \{1, 2, 3, \ldots, 10\}$.
3. Solve $5 - 4x > 2 - 3x$, $x \in \mathbf{W}$. Also represent its solution on the number line.
4. List the solution set of $30 - 4(2x - 1) < 30$, given that x is a positive integer.
5. Solve $2(x - 2) < 3x - 2$, $x \in \{-3, -2, -1, 0, 1, 2, 3\}$.
6. If x is a negative integer, find the solution set of $\frac{2}{3} + \frac{1}{3}(x + 1) > 0$.
7. Solve $\frac{2x-3}{4} \geq \frac{1}{2}$, $x \in \{0, 1, 2, \ldots, 8\}$.
8. Solve $x - 3(2 + x) > 2(3x - 1)$, $x \in \{-3, -2, -1, 0, 1, 2\}$. Also represent its solution on the number line.
9. Given $x \in \{1, 2, 3, 4, 5, 6, 7, 9\}$, solve $x - 3 < 2x - 1$.
10. Given $A = \{x ; x \in \mathbf{I}, -4 \leq x \leq 4\}$, solve $2x - 3 < 3$ where x has the domain A. Graph the solution set on the number line.
11. List the solution set of the inequation $\frac{1}{2} + 8x > 5x - \frac{3}{2}$, $x \in \mathbf{Z}$.
12. List the solution set of $\frac{11-2x}{5} \geq \frac{9-3x}{8} + \frac{3}{4}$, $x \in \mathbf{N}$.
13. Find the values of x, which satisfy the inequation :

    $-2 \leq \frac{1}{2} - \frac{2x}{3} \leq 1\frac{5}{6}$, $x \in \mathbf{N}$.

    Graph the solution set on the number line. *(2001)*
14. If $x \in \mathbf{W}$, find the solution set of $\frac{3}{5}x - \frac{2x-1}{3} > 1$. Also graph the solution set on the number line, if possible.
15. Solve :

    (*i*) $\frac{x}{2} + 5 \leq \frac{x}{3} + 6$, where x is a positive odd integer.

    (*ii*) $\frac{2x+3}{3} \geq \frac{3x-1}{4}$, where x is positive even integer.
16. Given that $x \in \mathbf{I}$, solve the inequation and graph the solution on the number line :

    $3 \geq \frac{x-4}{2} + \frac{x}{3} \geq 2$. *(2004)*
17. Given $x \in \{1, 2, 3, 4, 5, 6, 7, 9\}$, find the values of x for which

    $-3 < 2x - 1 < x + 4$.
18. Solve $1 \geq 15 - 7x > 2x - 27$, $x \in \mathbf{N}$.
19. If $x \in \mathbf{Z}$, solve $2 + 4x < 2x - 5 \leq 3x$. Also represent its solution on the number line.
20. Solve the inequation $12 + 1\frac{5}{6}x \leq 5 + 3x$, $x \in \mathbf{R}$. Represent the solution on a number line.
21. Solve $\frac{4x-10}{3} \leq \frac{5x-7}{2}$, $x \in \mathbf{R}$ and represent the solution set on the number line.
22. Solve $\frac{3x}{5} - \frac{2x-1}{3} > 1$, $x \in \mathbf{R}$ and represent the solution set on the number line.
23. Solve the inequation : $-3 \leq 3 - 2x < 9$, $x \in \mathbf{R}$. Represent your solution on a number line.

(2000)

Representation of solution set on the number line

1. The solution set of a linear inequation is given below. Represent the solution set on the number line.

   (a) $\{x | x \geq -5, x \in R\}$
   (b) $\{x | x < 3, x \in R\}$
   (c) $\{x | 1.5 \leq x \leq 3, x \in R\}$
   (d) $\{x | 5 < x < 10, x \in R\}$

2. Solve the linear inequation and represent the solution on the number line.

   (a) $\frac{5}{4}x > 1 + \frac{1}{3}(4x - 1), x \in R$
   (b) $3x - 14 \leq 4 - 3x, x \in N$
   (c) $2(5x - 8) \geq 3(4x - 7), x \in R$
   (d) $2(3x - 4) + 24 > 30, x \in W$

3. Solve the linear inequations and represent the solution set on the number line.

   (a) $-3 \leq 3 - 2x < 9, x \in R$
   (b) $x \geq 6 - 2x \geq 0, x \in R$
   (c) $2x - 27 < 15 - 7x \leq 1, x \in N$
   (d) $9 \geq 7x - 5 \geq 5x - 11, x \in R$
   (e) $3x + 5 < x + 14$ and $0 < x \leq 4, x \in Z$
   (f) $\frac{1}{3}(x - 1) < \frac{1}{4}(x + 2) < \frac{1}{6}(x + 4)$
   (g) $\frac{1}{3}(5x - 8) \geq \frac{1}{2}(4x - 7)$ and $x \geq 0$
   (h) $-2 \leq \frac{1}{2} - \frac{2x}{3} \leq 1\frac{5}{6}, x \in N$
   (i) $2x - 5 \leq 5x + 4 < 11, x \in R$

Note If the set to which x must belong is not given then the set is taken to be R.