

Jender Heart High School, Sec.-33B chd.

Class: VIII

Teacher: *Dr. P. T.*

Subject: Mathematics

Topic: chapter-16: linear Inequalities

Equation: It is the statement about the equality of two or more given expressions

Inequality: It is the statement about the inequality of two or more expressions.

$$2x + 5 > 9$$

$$\frac{4}{3}x - 6 < -3$$

$$\frac{2}{3}y \leq 8y - 3$$

Inequalities

Replacement Set

It is the Universal set from where the values of x are selected.

Solution set

It is the set from Universal set and satisfy the given inequality.

Properties of Inequalities.

- If $a < b$, then $a + c < b + c$ (If we add both side, inequality remains same)
- If $a < b$, then $a \times c < b \times c$ (If we multiply or divide $\begin{smallmatrix} \text{with } c > 0 \\ (\div) \end{smallmatrix}$, inequality $\begin{smallmatrix} (\div) \\ \text{remains same} \end{smallmatrix}$)
- If $a < b$, then $a \times c > b \times c$ (sign of equality changes, if c is negative)

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Exercise -16

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Sol'n-2 $x \in N \rightarrow$ means $\{1, 2, 3, 4, \dots\}$

(i) $3x - 8 < 0$

$$3x < 8$$

$$x < \frac{8}{3}$$

$$x < 2.\bar{6}$$

$$\text{Sol'n set} = \{1, 2\}$$

(ii) $7x + 3 \leq 17$

$$7x \leq 17 - 3$$

$$7x \leq 14$$

$$x \leq \frac{14}{7}$$

$$x \leq 2$$

$$\text{Sol'n set} = \{1, 2\}$$

(iii) $5 - x > 1$

$$-x > 1 - 5$$

$$-x > -4$$

$$x < 4$$

$$\text{Sol'n set} = \{1, 2, 3\}$$

(iv) $1 - 3x > -4$

$$-3x > -4 - 1$$

$$-3x > -5$$

$$x < \frac{5}{3}$$

$$x < 1.\bar{6}$$

$$\text{Sol'n set} = \{1\}$$

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v) $\frac{3-x}{2} > -1$

$$\frac{3-x}{2} > -1$$

$$3-x > -2$$

$$-x > -2-3$$

$$-x > -5$$

$$x < 5$$

$$\text{Sol'n set} = \{1, 2, 3, 4\}$$

vi) $-\frac{1}{4} \leq \frac{1}{2} - \frac{x}{3}$

$$\frac{x}{3} \leq \frac{1}{2} + \frac{1}{4}$$

$$\frac{x}{3} \leq \frac{2+1}{4}$$

$$\frac{x}{3} \leq \frac{3}{4}$$

$$x \leq \frac{9}{4}$$

$$x \leq 2\frac{1}{4}$$

$$\text{Sol'n set} = \{1, 2\}$$

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