CBSE Class 11 Mathematics

LINEAR INEQUALITIES

WORKSHEET

Q1. Solve $4x-7 > 5x-2$ when (i) x is a natural number (ii) x is an integer (iii) x is a real number.

Q2. Solve the following linear inequations, show the solution on number line:-

(i) $\frac{2x-3}{4} + 9 \geq 3 + \frac{4x}{3}$

(ii) $\frac{3(x-2)}{5} \geq \frac{5(2-x)}{3}$

(iii) $\frac{x+3}{x-2} \leq 2$

(iv) $\frac{5x-2}{3} - \frac{7x-3}{5} > x/4$

(v) $3x + 17 \leq 2(1-x)$

(vi) $\frac{2x+4}{x-1} \geq 5$

Q3. Solve the system of inequalities and represent the solutions on the number line.

(i) $\frac{5x}{4} + \frac{3x}{8} > \frac{39}{8}, \frac{2x-1}{12} - \frac{x-1}{3} < \frac{3x+1}{4}$

(ii) $2(2x+3) - 10 < 6(x-2), \frac{2x-3}{4} + 6 \geq 2 + \frac{4x}{3}$

(iii) $\frac{x}{2x+1} \geq \frac{1}{4}, \frac{6x}{4x-1} < \frac{1}{2}$

Q4. Solve graphically: - (i) $3x + 4y \geq 12, y \geq 1, x \geq 0$ (ii) $x - 2y \geq 0, 2x - y \leq -2, x \geq 0, y \geq 0$

(iii) $2x+y \leq 24, x + y \leq 11, 2x + 5y \leq 40, x \geq 0, y \geq 0$

Q5. In first four papers each of 100 marks, Rohit got 72, 83, 73, 95 marks. If he wants an average of greater than or equal to 75 marks and less than 80 marks, find the range of marks he should score in the fifth paper.

Q6. The sum of two natural numbers is 121. If the sum of bigger number and four times the smaller is equal to or greater than 271, find all possible values of the smaller number.

Q7. Given $P = \{x : 5 \leq 2x - 1 \leq 11, x \in R\}$ and $Q = \{ x : -1 \leq 3 + 4x < 23, x \in E, x \in I\}$ Where R = real numbers and I = integers. Represent P and Q on two different number lines. Write down the elements of P &Q.

Q8. The cost and revenue functions of a product are given by $C(x) = 2x + 400$ and $R(x) = 6x+20$ respectively, where x is the number of items produced by the manufacturer. How many items must the manufacturer sell to realize some profit?

Q9. Solve :- $-4x > 30$ when (i) $x \in R$ (ii) $x \in Z$ (iii) $x \in N$

Q10. Solve : $4x - 2 < 8$, when :- (i) $x \in R$, (ii) $x \in Z$ (iii) $x \in N$

Q11. How many litres of water will have to be added to 1250 litres of 45% solution of acid so that the resulting mixture will contain more than 25% but less than 30% acid content?

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