MATHS

BOOKS - JBD PUBLICATION

LINEAR INEQUALITIES

Example

1. Solve the inequalities given below for real x :-

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

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2. Solve the inequalities given below for real x :-

$$\frac{1}{2}\left(\frac{3x}{5}+4\right) \geq \frac{1}{3}(x-6)$$

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3. Solve the following inequalities:

$$3(1-x) < 2(x+4)$$

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4. Solve the following inequalities:

$$\frac{x}{2} \geq \frac{5x-2}{3} - \frac{7x-3}{5}$$

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5. Solve the following inequalities:

$$6 \leq -3(2x-4) < 12.$$

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6. Solve the following inequlities:

$$-15 < \frac{3(x-2)}{5} \leq 0$$

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7. Solve the inequalities given below and represent the solution graphically on number line:-

$$5(2x-7) - 3(2x+3) \leq 0, 2x + 19 \leq 6x + 47$$

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8. Solve the inequalities given below and represent the solution graphically on number line:- $3x - 7 > 2(x - 6), 6 - x > 11 - 2x$

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9. Find all pairs of consecutive even positive integers, both of which are larger than 5 such that their sum is less than 23.

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10. The longest side of a triangle is 3 times the shortest side and the third side is 2 cm shorter than the longest side. If the perimeter of the triangle is at least 61 cm, find the minimum length of the shortest side.

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11. To receive Grade 'A' in a course, one must obtain an average of 90 marks or more in five examinations (each of 100 marks). If Sunita's marks in first four examinations are 87, 92, 94

and 95, find minimum marks that Sunita must obtain in fifth examination to get grade 'A' in the course.

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12. The water acidity in a pool is considered normal when the average pH of the three measurements is between 8.2 and 8.5. if the first two pH reading are 8,48 and 8,35, find the range of pH of the third reading that will result in acidity level being normal.

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13. How many litres of water will have to be added to 1125 litres of the 45% solution of acid so that the resulting mixture will contain more than 25% but less than 30% acid content?

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14. Solve the following systems of inequalities graphically:

$4x + 5y \geq -20, x + 1 \leq 0, y \leq -1.$

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15. Solve the following systems of linear inequalities graphically

$3x + 4y \leq 60, x + 3y \leq 30, x \geq 0, y \geq 0.$

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16. Solve the following system of inequalities graphically:

$3x + 2y \leq 150, x + 4y \leq 80, x \leq 15, y \geq 0, x \geq 0$

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17. Solve the following system of inequalities graphically: $2x - y > 1, x - 2y < -1$

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18. Solve the following system of inequalities graphically:

$4x + 3y \leq 60, y \geq 2x, x \geq 3, x, y \geq 0$

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19. Solve the following system of inequalities graphically:

$x + 2y \leq 10, x + y \geq 1, x - y \leq 0, x > 0, y \geq 0$

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20. Solve the following inequalities:

$$\frac{|x-2|-1}{|x-2|-2} \leq 0$$

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