



MATHS

BOOKS - MBD MATHS (ODIA ENGLISH)

LINEAR INEQUALITIES

Question Bank

1. Determine whether the solution set is finite or infinite or empty: $x < 1000, x \in \mathbb{N}$



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2. Determine whether the solution set is finite or infinite or empty: $x < 1, x \in \mathbb{Z}$ (set of integers)



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3. Determine whether the solution set is finite or infinite or empty: $x < 2$, x is a positive integer.



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4. Determine whether the solution set is finite or infinite or empty: $x < 1$, x is a positive integer.



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5. Solve as directed: $5x \leq 20$ in positive integers, in integers.



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6. Solve as directed: $2x + 3 > 15$ in integers,
in natural numbers.



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7. Solve as directed: $5x + 7 < 32$ in integers,
in non-negative integers.



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8. Solve as directed: $-3x - 8 > 19$, in integers
,in real numbers.



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9. Solve as directed: $|x - 3| < 11$, in \mathbb{N} and in \mathbb{R} .



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10. Solve as directed : $2x + 3 > x - 7$ in \mathbb{R}



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11. Solve as directed : $x/2 + 7/2 < 3x-1$ in \mathbb{R}



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12. Solve as directed : $x/2 - x/3 + x/5 \leq 11/3$

for non-negative real numbers.



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13. Solve as directed : $2(3x-1) < 7x + 1 < 3$

$(2x + 1)$ for real values.



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14. Solve as directed : $7(x-3) \leq 4(x+6)$, for non-negative integral values.



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15. Solve as directed : Convert to linear inequality and solve for natural numbers:

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



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16. Solve in \mathbb{R} , $x/2 + 1 \leq 2x - 5 < x$. Also find its solution in \mathbb{N} .



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17. Solve in \mathbb{R} and also in \mathbb{Z} .

$$\frac{3x + 1}{5} \geq \frac{x + 2}{3} - \frac{5 - 3x}{5}$$



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18. Solve $|x - 1| > 1$ and represent the solution on the number line.



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19. Solve in \mathbb{R} and represent the solution on the number line. $|x - 5| < 1$



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20. Solve in \mathbb{R} and represent the solution on the number line. $\frac{x}{5} < \frac{2x + 1}{3} + \frac{1 - 3x}{6}$



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21. Solve in \mathbb{R} and represent the solution on the number line. $2x + 1 \geq 0$



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22. Solve in \mathbb{R} and represent the solution on the number line. $\frac{x - 1}{2} \leq \frac{x + 1}{3} < \frac{3x - 1}{6}$



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23. In a triangle ABC, AB, BC, and CA are x , $3x + 2$ and $x + 4$ units respectively where $x \in \mathbb{N}$. find the length of its sides.



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24. The length of one side of a parallelogram is 1 cm. shorter than that of its adjacent side. If its perimeter is at least 26 cm. find the minimum possible lengths of its sides.



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25. The lengths of the largest side of a quadrilateral is three times that of its smallest side. Out of the other two sides length of one is twice that of the smallest and the other is 1

cm. longer than the smallest. If the perimeter of the quadrilateral is at most 36 cm. then find the maximum possible lengths of its sides.



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26. Find all pairs of consecutive odd numbers each greater than 20 such that their sum is less than 60.



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27. Find all pairs of even numbers each less than 35, such that their sum is at least 50.



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28. Solve graphically

$$x \leq y$$



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29. Solve graphically

$$3x + 4y \geq 12$$



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30. Solve graphically

$$x - y > 0$$



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31. Solve graphically

$$x + 2y - 5 \leq 0$$



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32. Solve graphically

$$7x - 4y < 14$$



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33. Solve graphically $x + 8y + 10 > 0$



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34. Solve graphically $5x + 6y < 12$



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35. Solve graphically $-3x + y > 0$



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36. Solve graphically $3x + 8y > 24$



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37. Solve graphically $x + y \geq 1$



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38. Solve graphically $x \leq 0$



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39. Solve graphically $y > 5$



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40. Solve the following systems of linear inequalities graphically :

$$2x - y \geq 0, x - 2y \leq 0, x \leq 2, y \leq 2.$$



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41. Solve the following systems of linear inequalities graphically :

$$x - y < 1, y - x = 1$$





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42. Solve the following systems of linear inequalities graphically :

$$x - 2y + 2 < 0, x > 0$$



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43. Solve the following systems of linear inequalities graphically :

$$x - y + 1 \geq 0, 3x + 4y \leq 12, x \geq 0, y \geq 0.$$



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44. Solve the following systems of linear inequalities graphically :

$$x + y > 1, 3x - y < 3, x - 3y + 3 > 0.$$



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45. Solve the following systems of linear inequalities graphically : $x > y, x < 1, y > 0$.



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46. Solve the following systems of linear inequalities graphically : $x < y$, $x > 0$, $y < 1$.



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