



MATHS

BOOKS - MAXIMUM PUBLICATION

LINEAR INEQUALITIES

Example

1. Solve the following inequalities.

$$4x + 3 < 5x + 7$$



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2. Solve the following inequalities.

$$3(x - 1) \leq 2(x - 3)$$



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3. Solve the inequalities

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



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4. Show the solution of each inequality on a number line.

$$4x + 3 < 6x + 7$$



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5. Show the solution of each inequality on a number line.

$$5x - 3 \geq 3x - 5$$



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6. Show the solution of each inequality on a number line.

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



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7. Show the solution of each inequality on a number line.

$$2 - 3x < 2(x + 6)$$



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8. Show the solution of each inequality on a number line.

$$-3 \leq 3 - 2x < 6$$



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9. The marks obtained by a student of class XI in first and second terminal examination are 62 and 48, respectively. Find the minimum marks he should get in the annual examination to have an average of at least 60 marks.



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10. Solve the following inequalities.

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



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11. Solve the following inequalities.

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



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12. Which of the following sets of inequality represent the second quadrant?

A. $x < 0, y < 0$

B. $x > 0, y > 0$

C. $x < 0, y > 0$

D. $x > 0, y < 0$

Answer: A



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13. Find all pairs of consecutive even positive integers both of which are smaller than 10 such that their sum is less than 23.



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14. 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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15. Solve the following system of inequalities graphically.

$$2x - y > 1, x - 2y \leq 1$$



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16. Solve the following system of inequalities graphically.

$$x + y \leq 9, y > x, x \geq 0$$



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17. Solve the following system of inequalities graphically.

$$x - 2y \leq 3, 3x + 4y \geq 12, x \geq 0, y \geq 1$$



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18. Solve the following system of inequalities graphically.

$$2x + y - 3 \geq 0, x - 2y + 1 \geq 0, y \leq 3$$



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19. Draw the graphs of $2x + 3y = 24$ and $x + y = 9$



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20. Solve the following system of inequalities graphically

$$2x + 3y \leq 24, x + y \leq 9, x, y \geq 0.$$



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21. Solve $4x - 5 < 7$, when x is a real number.



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22. Solve the following system of inequalities

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



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23. Solve: $4x + 3 < 3x + 7$ represent the solution on the real line.



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24. Solve the following system of inequalities graphically. $3x + 2y \leq 12$, $x, y \geq 0$



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25. represent the inequality $x > 3$ on a number line.



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26. Solve the following inequalities graphically:

$$x + y \geq 5, x - y \leq 3$$



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27. The interval representing the solution of the inequality $3x - 1 \geq 5, x \in R$ is

A. $[5, \infty)$

B. $[2, \infty)$

C. $[3, \infty)$

D. $(-\infty, \infty)$

Answer: B



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28. Solve the system of inequality graphically

$$x + 2y \leq 8, 2x + y \leq 8, x \geq 0, y \geq 0$$



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29. Which among the following is the interval corresponding to the inequality $-2 < x \leq 3$.

A. $[-2,3]$

B. $[-2,3)$

C. $(-2,3]$

D. $(-2,3)$

Answer: C



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30. Solve the following equation.

$$2x + y \geq 4, x + y \leq 3, 2x - 3y \leq 6.$$



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31. which among the following inequality represents the intervals $[2, \infty)$

A. $x - 3 \geq 5, x \in R$

B. $3x - 3 \geq 5, x \in R$

C. $3x - 1 \geq 3, x \in R$

D. $3x - 1 \geq 5, x \in R$

Answer: D



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32. Solve the following system of inequalities graphically.

$$3x + 2y \leq 12, x \geq 1, y \geq 2$$



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33. Solve the inequality $3(x - 1) \leq 2(x - 3)$.



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34. Solve the following system of inequalities graphically. $5x + 4y \leq 20$, $x \geq 1$, $y \geq 2$



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35. Arathi took 3 examinations in an year. The marks obtained by her in the second and third examinations are more than 5 and 10 respectively than in the first examination. If her average mark is at least 80 find the

minimum mark that she should get in the first examination?



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36. Solve the following system of inequalities graphically $2x + y \geq 6$, $3x + 4y \leq 12$.



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37. Solve the inequality

$$2(2x + 3) - 10 < 6(x - 2)$$



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38. Solve the following system of inequalities graphically.

$$x - 2y \leq 3, 3x + 4y \geq 12, x, y \geq 0$$



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39. Find all pairs of consecutive odd natural numbers, both of which are smaller than 10, such that their sum is more than 11.



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40. Solve $2x + y \geq 6$ graphically.



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41. Solve the inequality: $3(2 - x) \geq 2(1 - x)$.



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42. Solve the following system of inequalities graphically.

$$2x + y \geq 4, x + y \leq 3, 2x - 3y \leq 6.$$



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43. Solve: $5x - 3 < 3x + 1$.



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44. Solve the following system of inequality graphically.

$$x + 2y \leq 8, 2x + y \leq 8, x, y \geq 0.$$



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45. Raju obtained 70 and 60 marks in first two examinations. Find the minimum mark he should get in the third examination to have an average of at least 50 marks.



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46. Solve the following system of inequalities graphically.

$$3x + 2y \leq 12, x \geq 1, y \geq 2.$$



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47. Solve: $5x + 3 < 2x + 7$ represent the solution on the real line.



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48. Solve the following system of inequality graphically.

$$x + 2y \leq 8, 2x + y \leq 8, x, y \geq 0.$$



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49. Solve: $7x + 3 < 5x + 9$ represent the solution on the real line.



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50. Solve the following system of inequality graphically.

$$x + 2y \leq 8, 2x + y \leq 8, x, y \geq 0.$$



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51. Solve $10x - 23 < 3x + 5$.



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52. Solve the following system of inequalities graphically:

$$3x + 5y \leq 15, 5x + 2y \leq 10, x, y \geq 0.$$



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53. Solve, $7x + 3 < 5x + 9, x \in R$. express the solution on a number line.



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54. Solve graphically,

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



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55. Solve the inequality $\frac{x}{3} > \frac{x}{2} + 1$.



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56. Solve the system of inequality graphically

$$2x + y > 6, 3x + 4y \leq 12.$$



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