



# MATHS

## BOOKS - OMEGA PUBLICATION

### LINEAR INEQUALITIES

#### Questions

1. Solve  $-12x > 30$ , when  $x$  is a natural number.



Watch Video Solution

2. Solve  $-12x > 30$ , when  $x$  is an integer.



**Watch Video Solution**

3. Solve  $3x + 8 > 2$ , when  $x$  is an integer.



**Watch Video Solution**

4. Solve  $3x + 8 > 2$ , when  $x$  is a real number.



**Watch Video Solution**

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



**Watch Video Solution**

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



**Watch Video Solution**

7. Solve the inequalities given below for real  $x$  :-

$$37 - (3x + 5) \geq 9x - 8(x - 3)$$



**Watch Video Solution**

**8.** Solve the inequalities given below for real  $x$  :-

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



**Watch Video Solution**

**9.** Solve the inequalities given below for real  $x$  :-

$$\frac{x}{4} < \frac{(5x - 2)}{3} - \frac{(7x - 3)}{5}$$



**Watch Video Solution**

10. Solve the inequalities given below for real x

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



[Watch Video Solution](#)

11. Solve the inequalities given below and show the graph of the solution on number line:-

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



[Watch Video Solution](#)

**12.** Solve the inequalities given below and show the graph of the solution on number line:-

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



**Watch Video Solution**

**13.** 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.



[Watch Video Solution](#)

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



[Watch Video Solution](#)

**15.** A man wants to cut three lengths from a single piece of board of length 91cm. The second length is to be 3cm longer than the shortest and the third length is to be twice as long as the shortest. What are the possible lengths of the shortest board if the third piece is to be at least 5cm longer than the second?

[Hint: If  $x$  is the length of the shortest board, then  $x$ ,  $(x + 3)$  and  $2x$  are the lengths of the second and third piece, respectively. Thus,

$$x + (x + 3) + 2x \leq 91 \quad \text{and}$$

$$2x \geq (x + 3) + 5],$$





[Watch Video Solution](#)

16. Solve  $y + 8 \geq 2x$  graphically.



[Watch Video Solution](#)

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



[Watch Video Solution](#)

18. Solve  $2x - 3y > 6$  graphically.



**Watch Video Solution**

**19.** Solve  $x > -3$  graphically.



**Watch Video Solution**

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



**Watch Video Solution**

21. Solve the following system of inequalities

graphically:  $2x - y > 1$ ,  $x - 2y < -1$



[Watch Video Solution](#)

22. Solve  $x \geq 3$ ,  $y \geq 2$  graphically.



[Watch Video Solution](#)

23. Solve  $x + y \leq 9$ ,  $y > x$ ,  $x \geq 0$  graphically.



[View Text Solution](#)

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



[Watch Video Solution](#)

25.

Solve

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

graphically.



[View Text Solution](#)

26.

Solve

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

graphically.



[View Text Solution](#)

27.

Solve

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

graphically.



[View Text Solution](#)

# Important Questions From Miscellaneous Exercise

1. Solve the inequalities given below:-

$$-12 < 4 - \frac{3x}{-5} \leq 2$$



[Watch Video Solution](#)

2. Solve the inequalities given below:-

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



[Watch Video Solution](#)

3. Solve the inequalities given below and represent the solution graphically on number

line:-  $5x + 1 > -24$ ,  $5x - 1 < 24$



**Watch Video Solution**

4. Solve the inequalities given below and represent the solution graphically on number

line:-  $3x - 7 > 2(x - 6)$ ,  $6 - x > 11 - 2x$



**Watch Video Solution**

5. A solution of 8% boric acid is to be diluted by adding a 2% boric acid solution to it. The resulting mixture is to be more than 4% but less than 6% boric acid. If we have 640 litres of the 8% solution, how many litres of the 2% solution will have to be added?



[Watch Video Solution](#)

6. IQ of a person is given by the formula

$$IQ = \frac{MA}{CA} \times 100, \text{ where MA is mental age}$$

and CA is chronological age. If  $80 \leq IQ \leq 140$



for a group of 12 years old children, find the range of their mental age.



[Watch Video Solution](#)

7. A solution is to be kept between  $68^{\circ}$  F and  $77^{\circ}$  F. What is the range in temperature in degree Celsius (C) if the Celsius / Fahrenheit (F) conversion formula is given by

$$F = \frac{9}{5}C + 32?$$



[Watch Video Solution](#)

## Multiple Choice Questions

1. The inequality  $4x + 3 < 6x + 7$  is true, when  $x$  belongs to

A.  $(-2, \infty)$

B.  $(-\infty, -2)$

C.  $(-2, 2)$

D. none of these

**Answer: A**



**Watch Video Solution**

2. The inequality  $4x - 7 < 3 - x$  is true, when  $x$  belongs to

A.  $(-\infty, -2)$

B.  $(-\infty, 2)$

C.  $(2, \infty)$

D.  $[-2, 2]$

**Answer: B**



**Watch Video Solution**

3. Solution of  $3x + 17 \leq 2(1 - x)$  is

A.  $x \leq 3$

B.  $-3 \leq x \leq 3$

C.  $x \leq -3$

D. none of these

**Answer: C**



**Watch Video Solution**

4. The inequality  $-2x + 6 \leq 5x - 4$  is true,  
when  $x$  belongs to

A.  $\left(\frac{9}{7}, \infty\right)$

B.  $\left[\frac{10}{7}, \infty\right)$

C.  $\left(\frac{10}{7}, \frac{12}{7}\right)$

D.  $\left(\infty, \frac{10}{7}\right]$

**Answer: B**



**Watch Video Solution**

5. Solve the inequalities given below for real  $x$  :-

$$37 - (3x + 5) \geq 9x - 8(x - 3)$$

A.  $x \leq 2$

B.  $x < -2$

C.  $x \geq 2$

D.  $x > 2$

**Answer: A**



**Watch Video Solution**

6. Solution of  $\frac{2x - 3}{3x - 5} \geq 3$  is

A.  $\left[1, \frac{12}{7}\right)$

B.  $\left[\frac{5}{3}, \frac{12}{7}\right]$

C.  $\left(-\infty, \frac{5}{3}\right)$

D.  $\left[\frac{12}{7}, \infty\right)$

**Answer: B**



**Watch Video Solution**

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

line:-  $5x + 1 > -24$ ,  $5x - 1 < 24$

A.  $-5 < x < 5$

B.  $5 < x < 10$

C.  $x \in (-\infty, \infty)$

D.  $x \in [-5, \infty]$

**Answer: A**



**Watch Video Solution**



8. The set of values of  $x$  which satisfy the inequations :  $2x - 3 < 7$  and  $2x > -4$  is

A.  $-2 < x < 5$

B.  $-2 < x < 2$

C.  $-5 < x < 2$

D. none of these

**Answer: B**



**Watch Video Solution**

9. The solution set of the system of inequations  $4x + 3 \geq 2x + 17$  and  $3x - 5 < -2$  is

A.  $(1, 7)$

B.  $(-\infty, 1)$

C.  $[7, \infty)$

D. no solution

**Answer: D**



**Watch Video Solution**

10. Solution set of the inequation

$$-11 \leq 4x - 3 \leq 13 \text{ is}$$

A.  $x \in [-2, 4]$

B.  $x \in [2, 5]$

C.  $x \in [-2, 2]$

D. none of these

**Answer: A**



**Watch Video Solution**

11. The solution set of

$$3x - 7 > 2(x - 6), 6 - x > 11 - 2x \text{ is}$$

A.  $x < 5$

B.  $x > -5$

C.  $x > 5$

D.  $x < -5$

**Answer: C**



**Watch Video Solution**

12. Solution of  $|3 - x| \leq x - 3$  is

A.  $x < 3$

B.  $x > 3$

C.  $x \geq 3$

D.  $x \leq 3$

**Answer: C**



**Watch Video Solution**

**13.** The values of  $x$  which satisfy the inequation

$$10 \leq -5(x - 2) < 20 \text{ are}$$

A.  $(-2, 0]$

B.  $[0, 2)$

C.  $[-2, 2]$

D. none of these

**Answer: A**



**Watch Video Solution**

14. Solution set of the inequations

$$3x - 7 < 5 + x \text{ and } 11 - 5x \leq 1$$

A.  $[2, 6]$

B.  $(2, 6)$

C.  $(2, 6]$

D.  $[2, 6)$

**Answer: D**



**Watch Video Solution**

15.  $-5 \leq \frac{5 - 3x}{2} \leq 8$  ਨੂੰ ਹੱਲ ਕਰੋ।

A.  $\left[ \frac{-11}{3}, 5 \right]$

B.  $\left[ 5, \frac{-11}{3} \right]$

C.  $\left[ -5, \frac{11}{3} \right]$

D.  $\left[ \frac{11}{3}, 5 \right]$

**Answer: A**



**Watch Video Solution**