



## MATHS

### BOOKS - S CHAND IIT JEE FOUNDATION

#### LINEAR INEQUALITIES

##### Solved Examples

1. Solve  $5(2x + 1) \leq 35$ , where  $x$  is a natural number.

 [Watch Video Solution](#)

2. Solve the inequality  $4(3 - x) \leq 16$ .

 [Watch Video Solution](#)

3. Solve the show the give inequality on the number line:

$$-5 \leq 3x - 2 < 7, \text{ where } x \in R$$

 [Watch Video Solution](#)

4. Solve  $|2x + 6| \leq 16$ .

 [Watch Video Solution](#)

5. Solve  $|4x - 3| \geq 5$ .

 [Watch Video Solution](#)

6. Show the region defined by  $-1 < y \leq 4$  on the cartesian.

 [Watch Video Solution](#)

7. Draw the graphs of the inequality  $y \leq x$ .

 [Watch Video Solution](#)

8. Draw the graph of  $x + 2y \geq -4$ .

 [Watch Video Solution](#)

9. Shade the region represented by the inequations.  $x + y \leq 3$  and  $3x - 2y \geq 4$ .

 [Watch Video Solution](#)

1. Water freezes at  $0^{\circ}C$  and boils at  $100^{\circ}C$ . Write an inequality to show the range of temperature ( $t$ ) for which water is a liquid.

A.  $t < 0^{\circ}C$

B.  $0^{\circ}C \leq t \leq 100^{\circ}C$

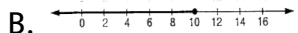
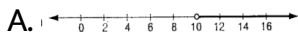
C.  $t > 100^{\circ}C$

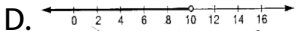
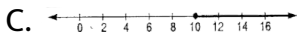
D.  $0^{\circ}C < t < 100^{\circ}C$

**Answer: D**

 [Watch Video Solution](#)

2. The number line matching the statement It was so cold in January in Shimla that the temperature never reached  $10^{\circ}C$  is





**Answer: D**

 [Watch Video Solution](#)

3. The solution set of  $x + 2 < 9$  over a set of positive even integers is

A.  $\{8,10,12,\dots\}$

B.  $\{2,4,6\}$

C.  $\{1,2,3,4,5,6\}$

D.  $\{2,3,6,8\}$

**Answer: B**

 [Watch Video Solution](#)

4. The solution set of  $3x - 4 < 8$  over the set of square numbers is

A.  $\{1,2,3\}$

B.  $\{1,4\}$

C.  $\{1\}$

D.  $\{16\}$

**Answer: C**



[Watch Video Solution](#)

5. The solution to the inequality  $-5x > 4$  is

A.  $x < \frac{4}{5}$

B.  $x > -\frac{4}{5}$

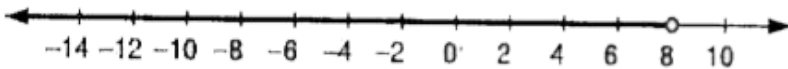
C.  $x < -\frac{4}{5}$

D.  $x > \frac{4}{5}$

**Answer: C**

 [Watch Video Solution](#)

6. Which inequality has the following number line solution:



A.  $2x - 4 < 16$

B.  $2x - 6 < 10$

C.  $2x - 6 > 12$

D.  $2x - 4 > 16$

**Answer: B**

 [Watch Video Solution](#)

7. Which shows the solution to the inequality  $-3.5x - 12 \leq 58$ ?

A.  $x \leq -120$

B.  $x \geq -70$

C.  $x \leq -70$

D.  $x \geq -20$

**Answer: D**



**Watch Video Solution**

8. The range of  $x$  giving the solution set of  $-1 < 5x + 4 \leq 19$  is

A.  $-1 \leq x < 3$

B.  $-1 < x \leq 3$

C.  $-1 \leq x \leq 3$

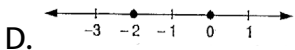
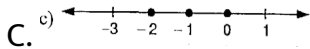
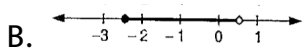
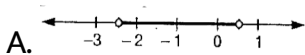
D.  $-1 < x < 3$



Answer: B

 Watch Video Solution

9. The inequality  $-1 \leq 2x + 4 < 5$ , where  $x$  is an integer can be represented on the number line as:



Answer: C

 Watch Video Solution

10. The solution to the inequality  $|10 - 2x| > 6$  is

A.  $2x < x < 8$

B.  $x < -2$  and  $x > 8$

C.  $x > 2$  and  $x < -8$

D.  $x < 2$  or  $x > 8$

**Answer: D**



**Watch Video Solution**

11. How many integers are there in the solution set of  $|2x + 6| < \frac{19}{2}$  ?

A. None

B. Two

C. Fourteen

D. Nine

**Answer: D**



**Watch Video Solution**

**12.** The solution to the inequality  $-2x + (3^3 - 5^2) \geq 4$  is

A.  $x \geq -1$

B.  $x \leq -1$

C.  $x > -2$

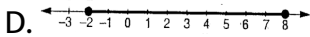
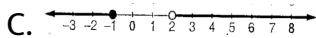
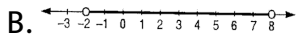
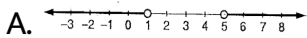
D.  $x < 2$  or  $x > 8$

**Answer: B**



**Watch Video Solution**

**13.** The inequality  $|3 - p| - 4 < 1$  can be represented on the number line as:



**Answer: B**

 [Watch Video Solution](#)

**14.** The solution set of the inequality

$$2(4x - 1) \leq 3(x + 4) \text{ is}$$

A.  $x > \frac{14}{5}$

B.  $x < 7$

C.  $x \leq \frac{14}{5}$

D.  $x \geq 7.5$

Answer: C



Watch Video Solution

15. Which of the following is the solution set of  $\left| \frac{2}{3}x - 5 \right| > 8$ ?

A.  $\left\{ x : -\frac{39}{2} < x < \frac{9}{2} \right\}$

B.  $\left\{ x : -\frac{9}{2} < x \leq \frac{39}{2} \right\}$

C.  $\left\{ x : x > \frac{39}{2} \text{ or } x < -\frac{9}{2} \right\}$

D.  $\left\{ x : x > \frac{9}{2} \text{ or } x < \frac{-39}{2} \right\}$

Answer: C



Watch Video Solution

16. If  $(2x - y < 7)$  and  $(x + 4y < 11)$ , then which one of the following is correct?

A.  $x + y < 5$

B.  $x + y < 6$

C.  $x + y \leq 5$

D.  $x + y \geq 6$

**Answer: B**



**Watch Video Solution**

17. The region for which  $x \geq 4$  is a part of the

A. first and second quadrants

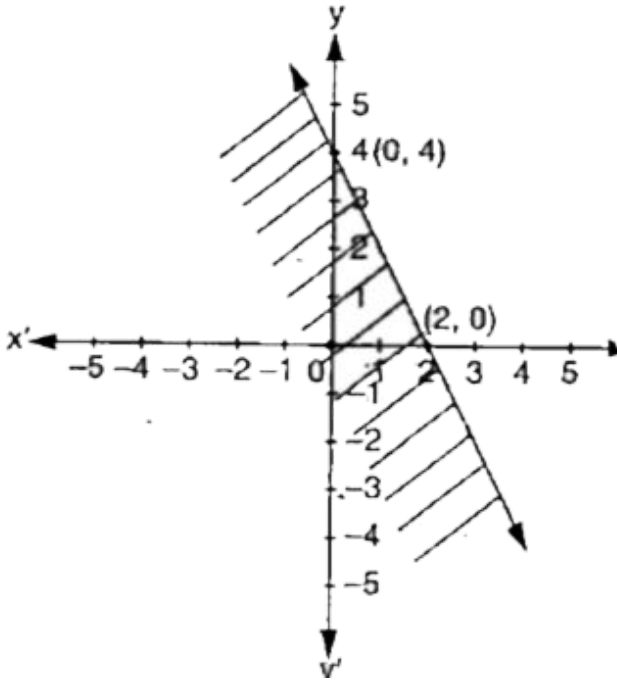
B. second and third quadrants

C. third and fourth quadrants

D. fourth and first quadrants

**Answer: D**

18. Which of the following inequations represents the shaded region?



A.  $2x + y \leq 4$

B.  $2x + y \geq 4$

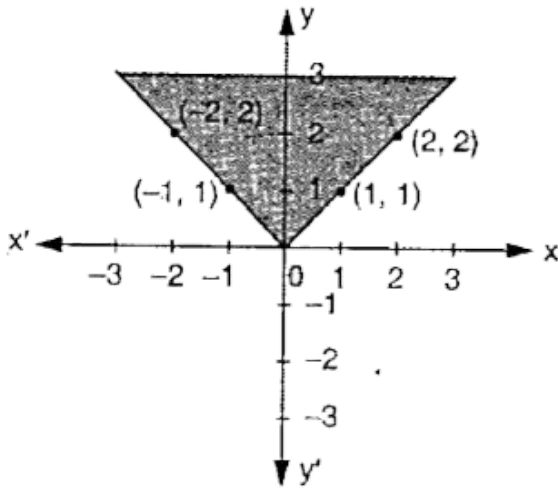
C.  $x + 2y \leq 4$

D.  $x + 2y \geq 4$

Answer: A

 Watch Video Solution

19. The shaded region is represented by the inequation:



A.  $y \geq x$

B.  $y \geq -x$

C.  $y \geq |x|$

D.  $y \leq |x|$



**Answer: C**



**Watch Video Solution**

**20.** The area of the plane region  $|x| \leq 5, |y| \leq 3$  is

- A. 15 sq units
- B. 34 sq. units
- C. 60 sq. units
- D. 120 sq. units

**Answer: C**



**Watch Video Solution**

1. The greatest value of  $x$  that satisfies the inequality  $2x + 3 < 25$ , where  $x$  is a prime number is

A. 11

B. 7

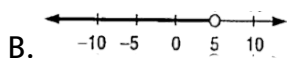
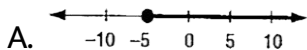
C. 10

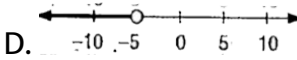
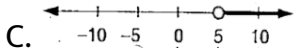
D. 2

**Answer: B**

 [Watch Video Solution](#)

2. Which graph represents the solution of the inequality  $x$  subtracted from 7 is less than 2





**Answer: C**

 [Watch Video Solution](#)

3. You are buying a carpet for a rectangular room. The carpet can be at most 12m long and 6m wide. Which inequality represents the area of the carpet in square metres?

A.  $A \leq 36$

B.  $A \geq 36$

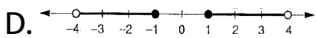
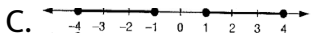
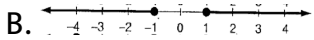
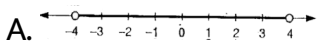
C.  $A \leq 72$

D.  $A \geq 72$

**Answer: C**

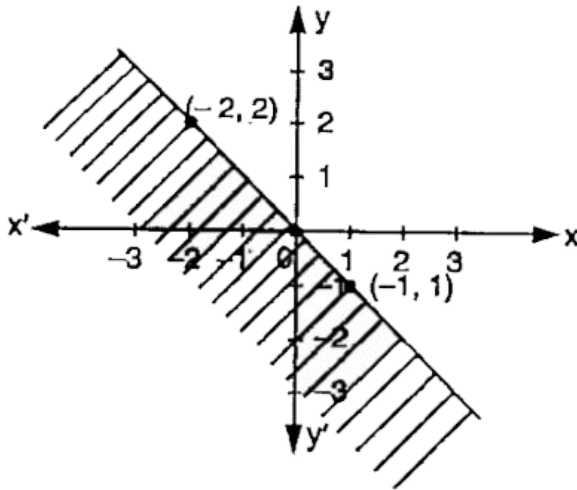


4. The absolute value of a number is its distance from 0 on a number line. The number line representing the inequality  $|x| < 4$  is



**Answer: A**

5. The graph of which inequality is shown below:



A.  $y - x \leq 0$

B.  $x - y \leq 0$

C.  $y + x \leq 0$

D. None of the above

**Answer: C**

 [Watch Video Solution](#)

6. The solution set of  $x \geq 5, y \geq 0$  and  $x \leq 5, y \leq 0$  is

A.  $x \geq -5, y = 0$

B.  $x = 5, y = 0$

C.  $x \geq -5, y \leq 0$

D.  $x \leq -5, y \leq 0$

**Answer: B**



[Watch Video Solution](#)

7. Given  $a > 0, b > 0, a > b$  and  $c \neq 0$ . Which in-equality is not always correct?

A.  $a + c > +c$

B.  $a - c > b - c$

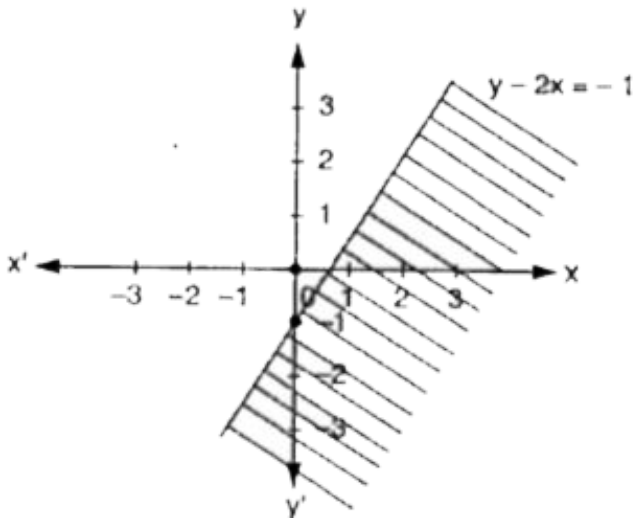
C.  $ac > bc$

D.  $\frac{a}{c^2} > \frac{b}{c^2}$

Answer: C

 Watch Video Solution

8. The shaded region is represented by the inequality:



A.  $y - 2x \leq -1$

B.  $x - 2y \leq -1$

C.  $y - 2x \geq -1$

$$D. x - 2y \geq -1$$

**Answer: A**

 [Watch Video Solution](#)

9. Solve  $|1 - x| > 3$ .

A.  $x > 4$  or  $x < -1$

B.  $x > 2$  or  $x < -2$

C.  $x > 5$  or  $x < -2$

D.  $x > 4$  or  $x < -2$

**Answer: D**

 [Watch Video Solution](#)



10. If  $x$  an integer greater than -10, but less than 10 and  $|x - 2| < 3$ , then the value of  $x$  are

A.

-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4

B. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

C. 0, 1, 2, 3, 4

D. -1, 0, 1

**Answer: C**



**Watch Video Solution**