MATHS

BOOKS - SELINA MATHS (ENGLISH)

LINEAR INEQUATIONS

Exercise 4 A

1. State, true of false :

$x < -y \Rightarrow -x > y$

Watch Video Solution

2. State, true of false :

$-5x \geq 15 \Rightarrow x \geq -3$

Watch Video Solution

3. State, true of false :

$2x \leq -7 \Rightarrow \frac{2x}{-4} > \frac{-7}{-4}$

Watch Video Solution

4. State, true of false :

$7 > 5 \Rightarrow \frac{1}{7} < \frac{1}{5}$

Watch Video Solution

5. State, whether the following statements are true of false.

If $a < b$, then $a - c < b - c$

Watch Video Solution

6. State, whether the following statements are true of false.

If $a > b$, then $a + c > b + c$

Watch Video Solution

7. State, whether the following statements are true of false.

If $a < b$, then $ac > bc$

Watch Video Solution

8. State, whether the following statements are true of false.

If $a > b$, then $\frac{a}{c} < \frac{b}{c}$

Watch Video Solution

9. State, whether the following statements are true of false.

$a - c > b - d$, then $a + d > b + c$

Watch Video Solution

10. State, whether the following statements are true of false.

If $a < b$, and $c > 0$, then $a - c > b - c$ where a, b, c and d are real number and $c = !0$.

Watch Video Solution

11. If $x \in R$, find the solution set of inequations.

$5x + 3 \leq 2x + 18$

Watch Video Solution

12. If $x \in R$, find the solution set of inequations.

$3x - 2 < 19 - 4x$

Watch Video Solution

13. If the replacement set is the set of whole numbers, solve :

$x + 7 < 11$

Watch Video Solution

14. If the replacement set is the set of whole numbers, solve :

$3x - 1 > 8$

Watch Video Solution

15. If the replacement set is the set of whole numbers, solve :

$8 - x > 5$

Watch Video Solution

16. If the replacement set is the set of whole numbers, solve :

$7 - 3x \geq -\frac{1}{2}$

Watch Video Solution

17. If the replacement set is the set of whole numbers, solve :

$x - \frac{3}{2} < \frac{3}{2} - x$

Watch Video Solution

18. If the replacement set is the set of whole numbers, solve :

18 < 3x - 2`

Watch Video Solution

19. Solve the inequation :

$3 - 2x > x - 12$ given that $x \in N$.

Watch Video Solution

20. If $25 - 4x < 16$, find :

the smallest value of x, when x is a real number.

Watch Video Solution

21. If $24 - 4x \leq 16$, find :

the smallest value of x, when x is an integer.

Watch Video Solution

22. If the replacement set is the set of real numbers, solve :

$-4x \geq -16$

Watch Video Solution

23. If the replacement set is the set of real numbers, solve :

$8 - 3x \leq 20$

Watch Video Solution

24. If the replacement set is the set of real numbers, solve :

$5 + \frac{x}{4} > \frac{x}{5} + 9$

Watch Video Solution

25. If the replacement set is the set of real numbers, solve :

$\frac{x+3}{8} < \frac{x-3}{5}$

Watch Video Solution

26. Find the smallest value of x for which $5 - 2x < 5\frac{1}{2} - \frac{5}{3}x$, where is an integer.

Watch Video Solution

27. Find the largest value of x for which

$2(x-1) \leq 9-x$ and $x \in W$.

Watch Video Solution

28. Solve the inequation :

$12+1\frac{5}{6}x \leq 5+3x$ and $x \in R$.

Watch Video Solution

29. Given $x \in$ {integers}, find the solution set of : $-5 \leq 2x-3 < x+2$.

Watch Video Solution

30. Given $x \in$ {whole numbers}, find the solution set of : $-1 \leq 3+4x < 23$.

Watch Video Solution

Exercise 4 B

1. Represent the following inequalities on real number lines :

$2x - 1 < 5$

Watch Video Solution

2. Represent the following inequalities on real number lines :

$3x + 1 \geq -5$

Watch Video Solution

3. Represent the following inequalities on real number lines :

$2(2x - 3) \leq 6$

Watch Video Solution

4. Represent the following inequalities on real number lines :

$-4 < x < 4$

Watch Video Solution

5. Represent the following inequalities on real number lines :

$-2 \leq x < 5$

Watch Video Solution

6. Represent the following inequalities on real number lines :

$8 \geq x > -3$

Watch Video Solution

7. Represent the following inequalities on real number lines :

$-5 < x \leq -1$

Watch Video Solution

8. For each graph given alongside, write an inequation taking x as the variable :

Watch Video Solution

9. For each graph given alongside, write an inequation taking x as the variable :

Watch Video Solution

10. For each graph given alongside, write an inequation taking x as the variable :

Watch Video Solution

11. For each graph given alongside, write an inequation taking x as the variable :

Watch Video Solution

12. For the following inequations, graph the solution set on the real number line :

$-4 \leq 3x - 1 < 8$

Watch Video Solution

13. For the following inequations, graph the solution set on the real number line :

$x - 1 < 3 - x \leq 5$

Watch Video Solution

14. Represent the solution of each of the following inequalities on the real number line :

$4x - 1 > x + 11$

Watch Video Solution

15. Represent the solution of each of the following inequalities on the real number line :

$7 - x \leq 2 - 6x$

Watch Video Solution

16. Represent the solution of each of the following inequalities on the real number line :

$x + 3 \leq 2x + 9$

Watch Video Solution

17. Represent the solution of each of the following inequalities on the real number line :

$2 - 3x > 7 - 5x$

Watch Video Solution

18. Represent the solution of each of the following inequalities on the real number line :

$1 + x \geq 5x - 11$

Watch Video Solution

19. Represent the solution of each of the following inequalities on the real number line :

$$\frac{2x+5}{3} > 3x - 3$$

Watch Video Solution

20. $x \in$ {real numbers} and $-1 < 3 - 2x \leq 7$, evaluate x and represent it on a number line.

Watch Video Solution

21. List the elements of the solution set of the inequation $-3 < x - 2 \leq 9 - 2x, x \in N.$

Watch Video Solution

22. Find the range of values of x which satisfies

$$-2\frac{2}{3} \leq x + \frac{1}{3} < 3\frac{1}{3}, x \in R.$$

Graph these values of x on the number line.

Watch Video Solution

23. Find the values of x, which satisfy the inequation:

$$-2 \leq \frac{1}{2} - \frac{2x}{3} \leq 1\frac{5}{6}, x \in N.$$

Graph the solution on the number line.

Watch Video Solution

24. Given $x \in$ {real numbers}, find the range of x for which $-5 \leq 2x - 3 < x + 2$ and represent it on a real number line.

Watch Video Solution

25. If $5x - 3 \leq 5 + 3x \leq 4x + 2$, express it as $a \leq x \leq b$ and then state the values of a and b.

Watch Video Solution

26. Solve the following inequation and graph the solution set on the number line :

$2x - 3 < x + 2 \leq 3x + 5, x \in R.$

Watch Video Solution

27. Solve and graph the solution set of :

$2x - 9 < 7 \text{ and } 3x + 9 \leq 25, \text{x} \in R$

Watch Video Solution

28. Solve and graph the solution set of :

$2x - 9 \leq 7$ and $3x + 9 \leq 25, x \in I.$

Watch Video Solution

29. Solve and graph the solution set of :

$x + 5 \geq 4(x - 1)$ and $3 - 2x < -7, x \in R.$

Watch Video Solution

30. Solve :

$3x - 2 < 19$ or $3 - 2x \geq -7, x \in R.$

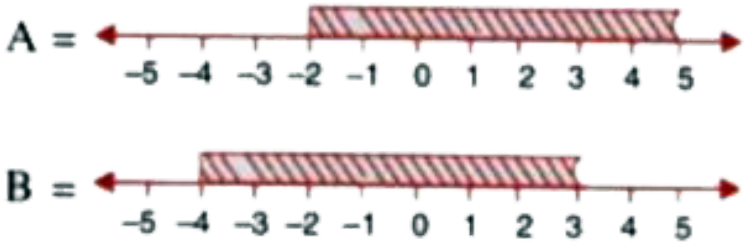
Watch Video Solution

31. Solve and graph the solution set of :

$5 > p - 1 > 2$ or $2p - 1 \leq 17, p \in R.$

Watch Video Solution

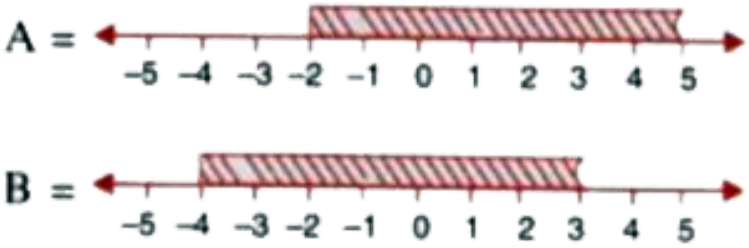
32. The diagram represents two inequation A and B on real number lines:



Write down A and B in set builder notation.

Watch Video Solution

33. The diagram represents two inequation A and B on real number lines:



Represent $A \cap B$ and $A \cap B'$ on two different number lines.

Watch Video Solution

34. Use real number line to find the range of values of x for which :

$x > 3$ and $0 < x < 6$.

Watch Video Solution

35. Use real number line to find the range of values of x for which :

$x < 0$ and $-3 \leq x < 1$.

Watch Video Solution

36. Use real number line to find the range of values of x for which :

$-1 < x \leq 6$ and $-2 \leq x \leq 3$.

Watch Video Solution

37. Illustrate the set $\{x : -3 \leq x < 0 \text{ or } x > 2, x \in R\}$ on a real number line.

Watch Video Solution

38. Given

$A = \{x : -1 < x \leq 5, x \in R\}$ and $B = \{x : -4 \leq x < 3, x \in R\}$.

Represent on different number line :

Watch Video Solution

39. Given

$A = \{x : -1 < x \leq 5, x \in R\}$ and $B = \{x : -4 \leq x < 3, x \in R\}$.

Represent on different number line :

Watch Video Solution

40. Given

$A = \{x : -1 < x \leq 5, x \in R\}$ and $B = \{x : -4 \leq x < 3, x \in R\}$.

Represent on different number line :

A - B

Watch Video Solution

41. P is the solution set of $7x - 2 > 4x + 1$ and Q is the solution set of $9x - 45 \geq 5(x - 5)$, where $x \in R$. Represent :

$P \cap Q$

Watch Video Solution

42. P is the solution set of $7x - 2 > 4x + 1$ and Q is the solution set of $9x - 45 \geq 5(x - 5)$, where $x \in R$. Represent :

P - Q

Watch Video Solution

43. P is the solution set of $7x - 2 > 4x + 1$ and Q is the solution set of $9x - 45 \geq 5(x - 5)$, where $x \in R$. Represent :

$P \cap Q'$ on different number lines.

Watch Video Solution

44. If

$P = \{x : 7x - 4 > 5x + 2, x \in R\}$ and $Q = \{x : x - 19 \geq 1 - 3x, x \in R\}$

, find the range of set $P \cap Q$ and represent it on a number line.

Watch Video Solution

45. Find the range of values of x, which satisfy :

$$-\frac{1}{3} \leq \frac{x}{2} + 1\frac{2}{3} < 5\frac{1}{6}$$

Graph, in each of the following cases, the values of x on the different real number lines :

$x \in W$

Watch Video Solution

46. Find the range of values of x, which satisfy :

$$-\frac{1}{3} \leq \frac{x}{2} + 1\frac{2}{3} < 5\frac{1}{6}$$

Graph, in each of the following cases, the values of x on the different real number lines :

$x \in Z$

Watch Video Solution

47. Find the range of values of x, which satisfy :

$$-\frac{1}{3} \leq \frac{x}{2} + 1\frac{2}{3} < 5\frac{1}{6}$$

Graph, in each of the following cases, the values of x on the different real number lines :

$x \in R.$

Watch Video Solution

48. Give : $A = \{x : -8 < 5x + 2 \leq 17, x \in I\}$

$B = \{x : -2 \leq 7 + 3x < 17, x \in R\}$

Where R = {real numbers} and I ={integers}. Represent A and B on two different number lines. Write down the elements of $A \cap B$.

Watch Video Solution

49. Solve the following inequality and represent the solution set on the real number line $2x - 5 \leq 5x + 4 < 11$, where x $\in I$, I is a set of integers.

Watch Video Solution

50. Given that $x \in I$, solve the inequation and graph the solution on the number line :

$3 \geq \frac{x-4}{2} + \frac{x}{3} \geq 2.$

Watch Video Solution

51. Given :

$A = \{x : 11x - 5 > 7x + 3, x \in R\}$ and $B = \{x : 18x - 9 \geq 12x. , x \in R\}$

.

Watch Video Solution

52. Find the set of values of x, satisfying $7x + 3 \geq 3x - 5$ and $\frac{x}{4} - 5 \leq \frac{5}{4} - x$, where $x \in N$.

Watch Video Solution

53. Solve :

$\frac{x}{2} + 5 \leq \frac{x}{3} + 6$, where x is a positive odd inteter

Watch Video Solution

54. Solve

$\frac{2x + 3}{3} \geq \frac{3x - 1}{4}$, where x is a positive even integer

Watch Video Solution

55. Solve the inequation :

$$-2\frac{1}{2}+2x \leq \frac{4x}{5} \leq \frac{4}{3}+2x, x \in W.$$

Graph the solution set on the number line.

Watch Video Solution

56. Find the consecutive largest positive integers such that the sum of one-third of first, one-fourth of second and one-fifth of third is at most 20.

Watch Video Solution

57. Solve the given inequation and graph the solution on the number line.

$2y-3<y+1 \leq 4y+7, y \in R.$

Watch Video Solution

58. Solve the inequation :

$3z - 5 \leq z + 3 \leq 5z - 9, z \in R.$

Watch Video Solution

59. Solve the following inequation and represent the solution set on the number line.

$-3 < -\frac{1}{2} - \frac{2x}{3} \leq \frac{5}{6}, x \in R.$

Watch Video Solution

60. Solve the following inequation and represent the solution set on the number line :

$4x - 19 < \frac{3x}{5} - 2 \leq \frac{-2}{5} + x, \in R$

Watch Video Solution

61. Solve the following inequation, write the solution set and represent it on the number line :

$$-\frac{x}{3} \leq \frac{x}{2} - 1\frac{1}{3} < \frac{1}{6}, x \in R.$$

Watch Video Solution

62. Find the values of x, which satisfy the inequation $-2\frac{5}{6} < \frac{1}{2} - \frac{2x}{3} \leq 2, x \in W$. Graph the solution set on the number line.

Watch Video Solution

63. Solve the following inequation and write the solution set :

$$13x - 5 < 15x + 4 < 7x + 12, x \in R$$

Represent the solution on a real number line.

Watch Video Solution

64. Solve the following inequation, write the solution set and represent it on the number line.

$$-3(x-7) \geq 15-7x > \frac{x+1}{3}, x \in R.$$

Watch Video Solution

65. Solve the following inequation and represent the solution set on a number line.

$$-8\frac{1}{2} < -\frac{1}{2} - 4x \leq 7\frac{1}{2}, x \in I$$

Watch Video Solution

Questions

1. If the replacement set is the of natural numbers (N), find the solution set of :

$3x + 4 < 16$

Watch Video Solution

2. If the replacement set is the of natural numbers (N), find the solution set of :

$8 - x \leq 4x - 2.$

Watch Video Solution

3. If the replacement set is the of whole numbers (W), find the solution set of :

$5x + 4 \leq 24$

Watch Video Solution

4. If the replacement set is the of whole numbers (W), find the solution set of :

$4x - 2 < 2x + 10.$

Watch Video Solution

5. If the replacement set is the set of integers, (I or Z), between - 6 and 8, find the solution set of :

$6x - 1 \geq 9 + x$

Watch Video Solution

6. If the replacement set is the set of integers, (I or Z), between - 6 and 8, find the solution set of :

$15 - 3x > x - 3.$

Watch Video Solution

7. If the replacement set is the real numbers (R), find the solution set of :

$5 - 3x < 11$

Watch Video Solution

8. If the replacement set is the real numbers (R), find the solution set of :

$8 + 3x \geq 28 - 2x.$

Watch Video Solution

9. Solve : $\frac{x}{2} - 5 \leq \frac{x}{3} - 4$, where is a positive and integer.

Watch Video Solution

10. Solve the following inequation : $2y - 3 < y + 1 \leq 4y + 7$, if :

$y \in$ (Integers)

Watch Video Solution

11. Solve the following inequation : $2y - 3 < y + 1 \leq 4y + 7$, if :

$y \in R$ (real numbers)

Watch Video Solution

12. Given that $x \in R$, solve the following inequality and graph the solution on the number the : $-1 \leq 3 + 4x < 23$

Watch Video Solution

13. Simplify : - $\frac{1}{3} \leq \frac{x}{2} - 1\frac{1}{3} < \frac{1}{6} : x \in R.$

Graph the values of x on the real number line.

Watch Video Solution

14. List the solution set of 50 - 3 (2x - 5) $<$ 25, given that $x \in W$. Also, represent the solution set obtained on a number line.

Watch Video Solution

15. Solve and graph the solution set of $3x + 6 \geq 9$ and $-5x > -15$, where $x \in R$.

Watch Video Solution

16. Solve and graph the solution set of $-2 < 2x - 6$ or $-2x + 5 \geq 13$. Where $x \in R$.

Watch Video Solution

17. Given : P = $\{x : 5 < 2x - 1 \leq 11, x \in R\}$

$Q = \{x : 1 \leq 3 + 4x < 23, x \in I\}$

where R = (real numbers) and I = (integers).

Represent P and Q on two different number lines. Write down the elements of $P \cap Q$.

Watch Video Solution

18. Write down the range of values of $x(x \in R)$ for which both the inequations $x > 2$ and $-1 \leq x \leq 4$ are true.

For any two solution sets A and B :

A and B = Intersection of sets A and B

= Set of elements common to set A and to set B

$= A \cap B$

Watch Video Solution

19. Write down the range of values of $x(x \in R)$ for which both the inequations $x > 2$ and $-1 \leq x \leq 4$ are true.

For any two solution sets A and B :

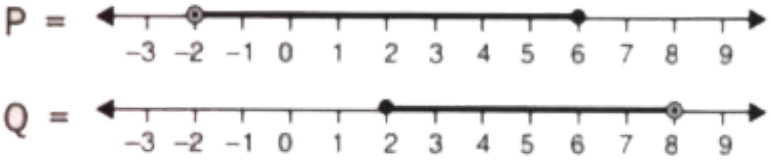
A and B = Intersection of sets A and B

= Set of elements common to set A and to set B

$= A \cap B$

Watch Video Solution

20. The diagram, given below, represents two inequations P and Q on real number lines :



Write down P and Q in set builder notation.

Watch Video Solution

21. The diagram, given below, represents two inequations P and Q on real number lines :

Represent each of the following sets on different number lines :

(a) $P \cup Q$

(b) $P \cap Q$

(c) $P - Q$

(d) Q - P

(e) $P \cap Q$

(f) $P \cap Q$

Watch Video Solution

22. Find three smallest consecutive whole numbers such that the difference between one - fourth of the largest and one-fifth of the smallest is at least 3.

Watch Video Solution

Multiple Choice Questions

1. In which of the following cases, the sign of inequality does not reverse in a linear inequation?

A. On adding a negative term to both sides

B. On multiplying a negative term both sides

C. On dividing a negative term both sides

D. On changing the sign of each term on both sides

Answer: A

View Text Solution

2. If the replacement set is the set of natural numbers, then the solution of $x \leq 3$ is:

A. {0, 1, 2}

B. {1, 2, 3}

C. {1, 2}

D. {0, 1, 2, 3}

Answer: B

View Text Solution

3. If the replacement set is the set of whole numbers, then the solution set of $12 - x \leq 3x - 2$ is

A. {0, 1, 2}

B. {1,2,3}

C. {1,2}

D. {0, 1, 2,3}

Answer: D

View Text Solution

4. If the replacement set is the set of integers between -10 and 10, then the solution of $-2 < \frac{1}{2} - \frac{2x}{3} < 1\frac{5}{6}$ is:

A. $\{-1, 0, 1, 2\}$

B. $\{-2, -1, 0, 1, 2, 3\}$

C. $\{-1, 0, 1, 2, 3\}$

D. $\{-2, -1, 0, 1, 2\}$

Answer: C

View Text Solution

5. If the replacement set is the set of real numbers, then the solution set of $8 - 3x \geq 28 + 2x$ is

A. All real numbers less than (-4)

B. All real numbers less than or equal to (-4)

C. All real numbers greater than (-4)

D. All real numbers greater than or equal to (-4)

Answer: B

View Text Solution

6. If $2x - 5 \leq 5x + 4 \leq 11$ and x is a natural number (N), then the solution set of x is

A. {1}

B. $\{-3, -2, -1, 0, 1\}$

C. $\{-2, -1, 0, 1\}$

D. $\{-2, -1, 0\}$

Answer: A

View Text Solution

7. If $\frac{x}{2} - 5 \leq \frac{x}{3} - 4$ and x is a natural even number, then the solution set of x is

A. $\{-6, -4, -2\}$

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

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

D. {2, 4, 6, 8}

Answer: C

View Text Solution

8. If $2x - 5 \leq 5x + 4 < 29$ and x is an integer, then the solution set of x is

A. $\{-2, -1, 0, 1, 2, 3, 4, 5\}$

B. $\{-2, -1, 0, 1, 2, 3, 4\}$

C. $\{-3, -2, -1, 0, 1, 2, 3, 4, 5\}$

D. $\{-3, -2, -1, 0, 1, 2, 3, 4\}$

Answer: D

View Text Solution

9. If $-1 < 3 + 4x \leq 23, x \in R$ (real numbers), then the solution set of x is

A. $-1 \leq x < 5, x \in R$

B. $-1 < x \leq 5, x \in R$

C. $-1 \leq x \leq 5, x \in R$

D. $-1 < x < 5, x \in R$

Answer: B

View Text Solution

10. If $2x - 3 \leq x + 1 \leq 4x + 7, x \in I$ (integers), then the solution set of x is

A. $\{-2, -1, 0, 1, 2, 3, 4\}$

B. $\{-1, 0, 1, 2, 3\}$

C. $\{-2, -1, 0, 1, 2, 3\}$

D. $\{-1, 0, 1, 2, 3, 4\}$

Answer: A

View Text Solution

11. If $M = \{x : 11x - 5 \geq 7x + 3, x \in R\}$ and $N = \{x : 18x - 9 \leq 15 + 12x, x$, then the common solution of M and N i.e., range of set $M \cap N$ is

A. $x \leq 2, x \in R$

B. $x < 4, x \in R$

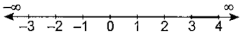
C. $-4 \leq x \leq -2, x \in R$

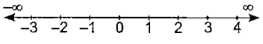
D. $2 \leq x \leq 4, x \in R$

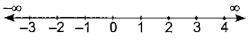
Answer: D

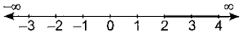
View Text Solution

12. If $2 \leq 2x - 3 \leq 5, x \in I$, then the solution set of x on the number line is:

A. 

B. 

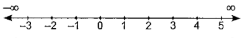
C. 

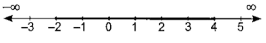
D. 

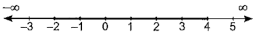
Answer: B

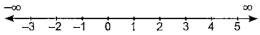
View Text Solution

13. If $2x - 3 < x + 1 < 4x + 7, x \in R$ then the solution set of x on the number line is:

A. 

B. 

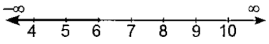
C. 

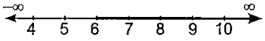
D. 

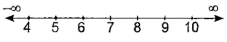
Answer: C

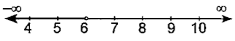
View Text Solution

14. If $\frac{x}{2} - 5 \leq \frac{x}{3} - 4, x \in R$, then the solution set of x on the number line is:

A. 

B. 

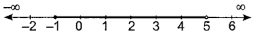
C. 

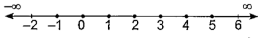
D. 

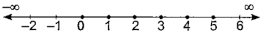
Answer: A

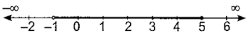
View Text Solution

15. If $-5 < 2x - 3 \leq x + 2, x \in R$, then the solution set of x on the number line is

A. 

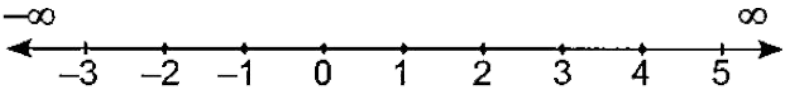
B. 

C. 

D. 

Answer: D

View Text Solution

16. If 

represents the solution set of a linear inequation in x, then the solution set in set-builder form is:

A. $\{x : 2 - \ < x < 3, x \in I\}$

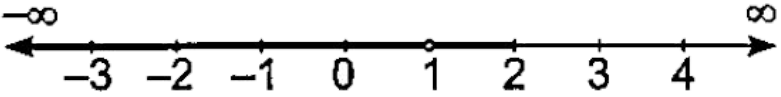
B. $\{x: -2 < x < 3, x \in W\}$

C. $\{x: -2 < x \leq 3, x \in W\}$

D. $\{x: -2 \leq x \leq 3, x \in I\}$

Answer: D

View Text Solution

17. 

If

represents the solution set of a linear inequation in x, then the solution set in set-builder form is:

A. $\{x: x < 2, x \in R\}$

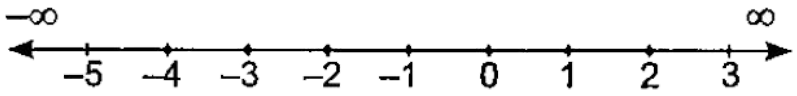
B. $\{x: x \leq 2, x \in R\}$

C. $\{x: -\infty \leq x < 2, x \in R\}$

D. $\{x: -\infty \leq x \leq 2, x \in R\}$

Answer: A

View Text Solution

18. If 

is the solution set of a linear in equation in x, then the solution set of x in set-builder form is:

A. $\{x: -4 \leq x \leq 2, x \in R\}$

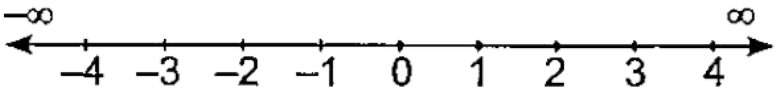
B. $\{x: -5 < x < 3, x \in R\}$

C. $\{x: -4 \leq x \leq 2, x \in N\}$

D. $\{x: -5 < x < 3, x \in I\}$

Answer: D

View Text Solution

19. If 

is the solution set of a linear inequation in x, then the solution set of x in set-builder form is:

A. $\{x : x < 4, x \in W\}$

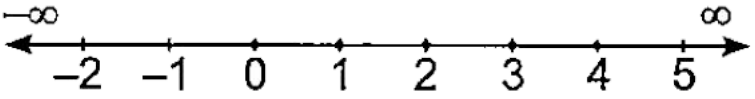
B. $\{x : x \leq 4, x \in W\}$

C. $\{x : x < 4, x \in N\}$

D. $\{x : x \leq 4, x \in N\}$

Answer: B

View Text Solution

20. If 

represents solution set of a linear inequation in y, then which of the following cannot be a solution set of y?

A. $\{y: 0 \leq y \leq 4, y \in I\}$

B. $\{y: 0 \leq y \leq 4, y \in W\}$

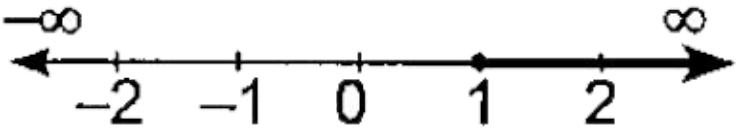
C. $\{y: 0 \leq y \leq 4, y \in N\}$

D. None of these

Answer: C

View Text Solution

21. If



represents solution of a linear inequation in x on a number line, then the solution set in set-builder form is:

A. $\{x: x > 1, x \in R\}$

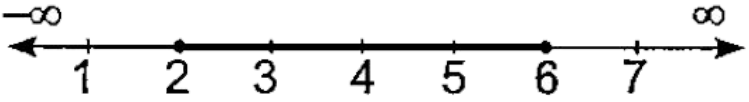
B. $\{x: x \geq 1, x \in R\}$

C. $\{x: x > 1, x \in W\}$

D. $\{x : x \geq 1, x \in W\}$

Answer: B

View Text Solution

22. If 

represents solution of a linear inequation in x on a number line, then which of the following is correct, regarding the solution set ?

A. $2 < x \leq 6, x \in N$

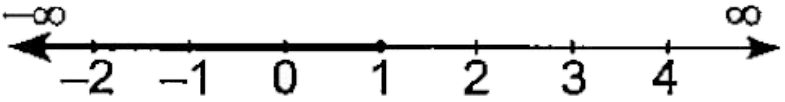
B. $2 \leq x < 6, x \in N$

C. $2 \leq x < 6, x \in R$

D. $2 < x \leq 6, x \in R$

Answer: D

View Text Solution

23. If 

represents solution set of a linear inequation in x on a number lline, then this solution can be written as:

A. $-\infty < x < 1, x \in W$

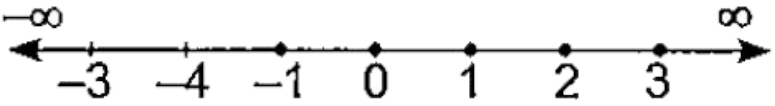
B. $-\infty < x \leq 1, x \in R$

C. $-\infty \leq x \leq 1, x \in R$

D. $-\infty \leq x \leq 1, x \in W$

Answer: B

View Text Solution

24. If 

represents solution set of a linear inequation in x, then the replacement

set of x must be:

A. W

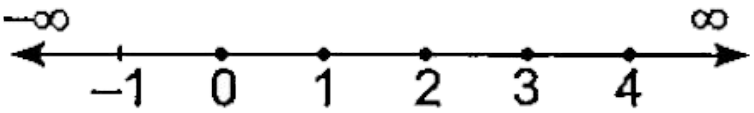
B. N

C. R

D. I

Answer: D

View Text Solution

25. If 

represents solution set of a linear inequation in x, then the replacement set of x must be:

A. W or I

B. I or N

C. N or W

D. I or N or W

Answer: A

View Text Solution

26. The solution set of x in a linear inequation is $\{-5, -4, -3, -2, -1, 0, 1, 2, \}$. In set-builder form, it is written as:

A. $\{x: -5 \leq x \leq 2, x \in N\}$

B. $\{x: -5 \leq x \leq 2, x \in W\}$

C. $\{x: -5 \leq x \leq 2, x \in I\}$

D. $\{x: -5 \leq x \leq 2, x \in R\}$

Answer: C

View Text Solution

27. If the solution set of a linear inequation in x in $\{x: -3 < x < 3, x \in I\}$, then its roster form is:

A. $\{-2, -1, 0, 1, 2\}$

B. $\{-3, -2, -1, 0, 1, 2, 3\}$

C. $\{-3, -2, -1, 0, 1, 2\}$

D. $\{-2, -1, 0, 1, 2, 3\}$

Answer: A

View Text Solution

28. If $25 - 4x \leq 16, x \in N$, then the smallest value of x is:

A. $\frac{9}{4}$

B. 2

C. 3

D. None of these

Answer: C

View Text Solution

29. If $\frac{5x}{4} - \frac{4x-1}{3} > 1, x \in I$ then the largest value of x is:

A. -8

B. -9

C. -7

D. None of these

Answer: B

View Text Solution

30. If $-2 \leq \frac{1}{2} - \frac{2x}{3}, x \in R$, then the largest value of x is:

A. 3

B. 4

C. $\frac{15}{4}$

D. None of these

Answer: C

View Text Solution

31. The solution set of $-1 \leq 3 + 4x < 23, x \in W$ is

A. {0, 1, 2, 3, 4}

B. $\{-1, 0, 1, 2, 3, 4\}$

C. {0,1,2,3,4,5}

D. $\{-1, 0, 1, 2, 3, 4, 5\}$

Answer: A

View Text Solution

32. The solution set of $-2\frac{2}{3} < x + \frac{1}{3} \leq 3\frac{1}{3}, x \in R$ is

A. $\{x: -3 < x < 3, x \in R\}$

B. $\{x: -3 \leq x < 3, x \in R\}$

C. $\{x: -3 \leq x \leq 3, x \in R\}$

D. $\{x: -3 < x \leq 3, x \in R\}$

Answer: D

View Text Solution

33. The solution set of $-3 + x \leq \frac{8x}{3} + 2 \leq \frac{14}{3} + 2x, x \in R$ is

A. $-3 < x < 4$

B. $-3 < x \leq 4$

C. $-3 \leq x \leq 4$

D. $-3 \leq x < 4$

Answer: C

View Text Solution

34. The set of values of x, satisfying both $7x + 3 \geq 3x - 5$ and $\frac{x}{4} - 5 \leq \frac{5}{4} - x, x \in N$ is

A. $\{-2, -1, 0, 1, 2, 3, 4, 5\}$

B. {1,2,3,4,5}

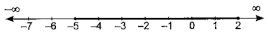
C. {0,1,2,3,4,5}

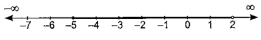
D. None of these

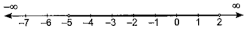
Answer: B

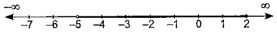
View Text Solution

35. The solution set of $\frac{3x}{5} + 2 < x + 4 \leq \frac{x}{2} + 5, x \in R$ on the number line is:

A. 

B. 

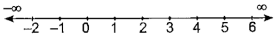
C. 

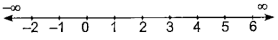
D. 

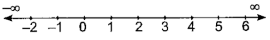
Answer: D

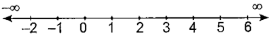
View Text Solution

36. The solution set of $11x - 4 < 15x + 4 \leq 13x + 14, x \in I$, on the number line is

A. 

B. 

C. 

D. 

Answer: A

View Text Solution

37. The solution set of $-2+10x \leq 13x+10 < 24+10x, x \in Z$ is

A. $\{-4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

B. $\{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$

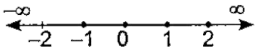
C. $\{-3, -2, -1, 0, 1, 2, 3, 4\}$

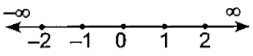
D. $\{-3, -2, -1, 0, 1, 2, 3, 4, 5\}$

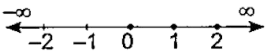
Answer: B

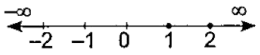
View Text Solution

38. The solution set of $-8\frac{1}{2} < -\frac{1}{2} - 4x < 7\frac{1}{2}, x \in W$ on the number line is:

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

39. Which of the following linear inequation has a solution set $\{-1, 0, 1, 2, 3\}$?

A. $\frac{2}{3} + \frac{1}{3}(x+1) > 0, x \in I$

B. $2(x-2) < 3x - 2 < 10, x \in I$

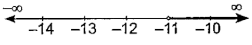
C. $5x + 7 > 27, x \in I$

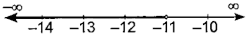
D. $3x + 12 < 0, x \in I$

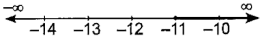
Answer: B

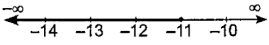
View Text Solution

40. The solution set of $\frac{2x+1}{3} < \frac{3x-2}{5} x \in R$ on the number line is

A. 

B. 

C. 

D. 

Answer: B

View Text Solution

41. The solution set of $-1 < 3 - 2x < 9, x \in I$ is .....

A. $\{-2, -, 1, 0, 1\}$

B. $\{-3, -2, -1, 0, 1, 2\}$

C. $\{-2, -1, 0, 1, 2\}$

D. $\{-3, -2, -1, 0, 1\}$

Answer: A

View Text Solution

42. The set of $3x + 24 > 8x - 6, x \in R$ is.....

A. $\{x : -\infty < x \leq 2, x \in R\}$

B. $\{x : -\infty \leq x < 2, x \in R\}$

C. $\{x : -\infty \leq x \leq 2, x \in R\}$

D. $\{x : -\infty < x < 2, x \in R\}$

Answer: D

View Text Solution

43. If $\{x : 4 \leq x < \infty\}$ is a solution set of a linear inequation in x, then the replacement set of x must be.....

A. N

B. Z

C. W

D. R

Answer: D

View Text Solution

44. On multiplying $\{-5\}$ on both sides of a linear inequation, the linear inequation become .....

A. $-2x+7 \geq -4x+9$

B. $2x-7 \geq 4x-9$

C. $-2x+7 \leq 4x-9$

D. $2x-7 \leq 4x-9$

Answer: B

View Text Solution

45. To solve the linear inequation $5x + 7 < 27, x \in I$, we add (-7) to both sides, with this operation, the sign of inequality.....

A. reverses

B. remain same

C. data insufficient

D. None of these

Answer: B

View Text Solution

46. If $x \geq y \Rightarrow \frac{x}{p} \leq \frac{y}{p}$, then p is.....

A. negative

B. positive

C. zero

D. None of these

Answer: A

View Text Solution

47. If $x \geq y$ and we take their reciprocals, then $\frac{1}{x}$ ..... $\frac{1}{y}$.

A. $\geq$

B. $\leq$

C. $>$

D. $<$

Answer: B

View Text Solution

Assertion And Reason Based Questions

1. Assertion :If the solution set of $5x + 4 \leq 24$ is {1,2,3,4}, then the replacement set of x is N.

Reason: In number system, the symbol N denotes the set of natural numbers i.e., 1, 2, 3, 4, 5,6.....

A. Both assertion and reason are correct and reason is the correct explanation of assertion

B. Both assertion and reason are correct but reason is not the correct explanation of assertion

C. Assertion is correct but reason is incorrect

D. Assertion is incorrect but reason is correct

Answer: A

View Text Solution

2. Assertion: The solution set of $4x - 2 \leq 2x + 10, x \in W$ is {0,1,2,3,4,5}

Reason: In number system, the symbol W denotes the set of whole numbers i.e., 0,1,2,3,4.....

A. Both assertion and reason are correct and reason is the correct explanation of assertion

B. Both assertion and reason are correct but reason is not the correct explanation of assertion

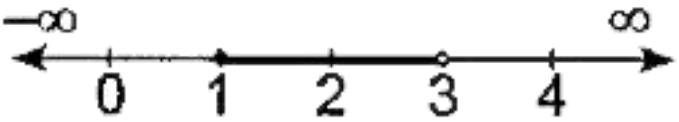
C. Assertion is correct but reason is incorrect

D. Assertion is incorrect but reason is correct

Answer: D

View Text Solution

3. Assertion: The common solution set of $3x + 6 \geq 9$ and $-5x > -15, x \in R$ on the number line is



Reason: On the number line, the hollow circle marks the end of a range involving an equality as well i.e., $\leq$ or $\geq$ and the darkened circle marks the end of a range with a strict inequality i.e., $<$ or $>$.

A. Both assertion and reason are correct and reason is the correct explanation of assertion

B. Both assertion and reason are correct but reason is not the correct explanation of assertion

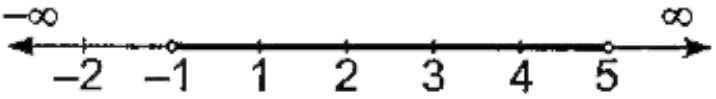
C. Assertion is correct but reason is incorrect

D. Assertion is incorrect but reason is correct

Answer: C

View Text Solution

4. Assertion: The solution set of $-1 < 3 + 4x \leq 23, x \in R$ on the number line is



Reason: In the solution set, the number -1 is not included and the number 5 is included.

A. Both assertion and reason are correct and reason is the correct explanation of assertion

B. Both assertion and reason are correct but reason is not the correct explanation of assertion

C. Assertion is correct but reason is incorrect

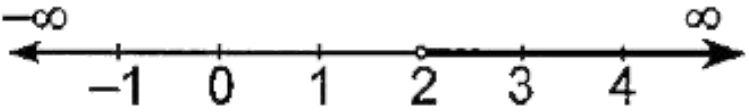
D. Assertion is incorrect but reason is correct

Answer: A

View Text Solution

5. Assertion: The solution set of $2x - 3 \leq x + 1 \leq 4x + 7, x \in N$ is {1, 2, 3,4} .

Reason: If the solution of a linear inequation is $x > 2, x \in R$ then on the number line, it is represented as



A. Both assertion and reason are correct and reason is the correct explanation of assertion

B. Both assertion and reason are correct but reason is not the correct explanation of assertion

C. Assertion is correct but reason is incorrect

D. Assertion is incorrect but reason is correct

Answer: B

View Text Solution

Competency Based Questions

1. Two real numbers or two algebraic expressions related by the symbols $>$, $<$, $\leq$ or $\geq$ form an inequation. If the highest power of the variables used in the inequation is 1, then the inequation is called linear inequation. For the linear inequation $3x - 5 \leq 8$, answer teh following questions.

If $x \in I$, then the highest value of x is

A. 3

B. 4

C. 5

D. $4\frac{1}{3}$

Answer: B

View Text Solution

2. Two real numbers or two algebraic expressions related by the symbols $>$, $<$, $\leq$ or $\geq$ form an inequation. If the highest power of the variables used in the inequation is 1, then the inequation is called linear inequation. For the linear inequation $3x - 5 \leq 8$, answer teh following questions.

If $x \in R$, then the highest value of x is:

A. 3

B. $4\frac{1}{3}$

C. 4

D. 5

Answer: B

View Text Solution

3. Two real numbers or two algebraic expressions related by the symbols $>$, $<$, $\leq$ or $\geq$ form an inequation. If the highest power of the

variables used in the inequation is 1, then the inequation is called linear inequation. For the linear inequation $3x - 5 \leq 8$, answer teh following questions.

If $x \in W$, then the smallest value of x is:

A. 0

B. 1

C. 2

D. 4

Answer: A

View Text Solution

4. Two real numbers or two algebraic expressions related by the symbols $>$, $<$, $\leq$ or $\geq$ form an inequation. If the highest power of the variables used in the inequation is 1, then the inequation is called linear inequation. For the linear inequation $3x - 5 \leq 8$, answer teh following

questions.

If $x \in R$, then the solution set of x is:

A. $\left\{x: -\infty < x < 4\frac{1}{3}, x \in R\right\}$

B. $\left\{x: -\infty \leq x \leq 4\frac{1}{3}, x \in R\right\}$

C. $\left\{x: -\infty \leq x < 4\frac{1}{3}, x \in R\right\}$

D. $\left\{x: -\infty < x \leq 4\frac{1}{3}, x \in R\right\}$

Answer: D

View Text Solution

5. Two real numbers or two algebraic expressions related by the symbols $>$, $<$, $\leq$ or $\geq$ form an inequation. If the highest power of the variables used in the inequation is 1, then the inequation is called linear inequation. For the linear inequation $3x - 5 \leq 8$, answer teh following questions.

If $x \in N$, then the solution set of x is

A. {1, 2,3,4,5}

B. {0,1,2,3,4}

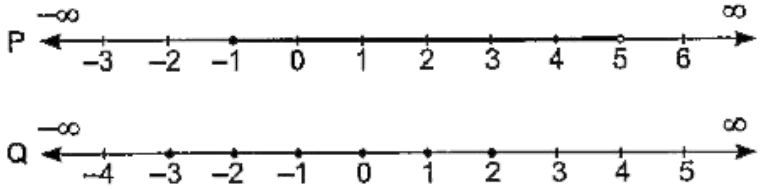
C. {1,2,3,4}

D. {0,1,2,3,4,5}

Answer: C

View Text Solution

6. The following diagram represents the solution of two sets P and Q on the number line:



The solution set of P in set-builder form is

A. $\{x: -1 < x \leq 5, x \in R\}$

B. $\{x: -1 \leq x < 5, x \in R\}$

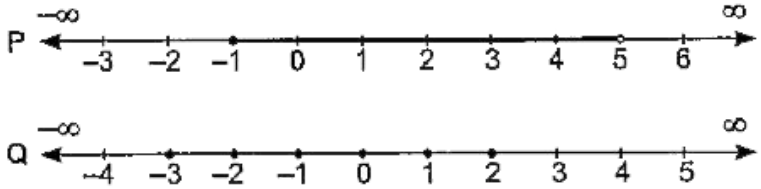
C. $\{x: -1 \leq x \leq 5, x \in R\}$

D. $\{x: -1 < x < 5, x \in R\}$

Answer: B

View Text Solution

7. The following diagram represents the solution of two sets P and Q on the number line:



Which of the following is a replacement set of Q?

A. R

B. N

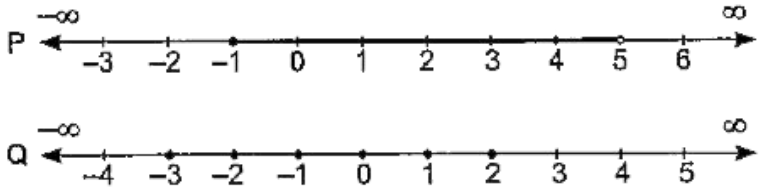
C. W

D. Z

Answer: D

View Text Solution

8. The following diagram represents the solution of two sets P and Q on the number line:



The solution set of Q in set builder form is:

A. $\{x: -3 < x < 2, x \in R\}$

B. $\{x: -3 \leq x \leq 2, x \in I\}$

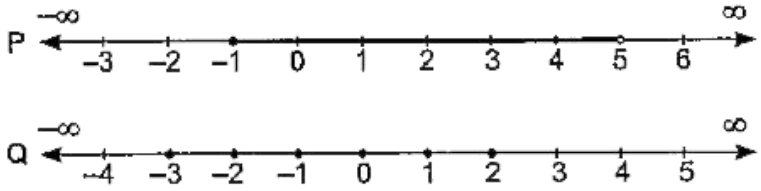
C. $\{x: -3 < x \leq 2, x \in N\}$

D. $\{x: -3 \leq x < 2, x \in W\}$

Answer: B

View Text Solution

9. The following diagram represents the solution of two sets P and Q on the number line:



The solution set of Q in roaster form is:

A. $\{-2, -1, 0, 1\}$

B. {1, 2}

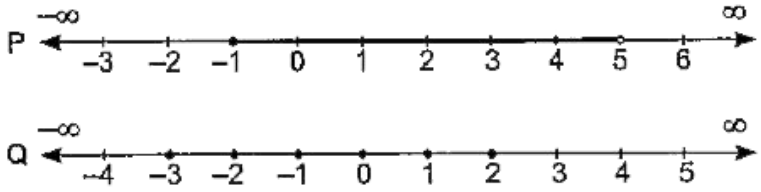
C. $\{-3, -2, -1, 0, 1, 2\}$

D. {0,1,2}

Answer: C

View Text Solution

10. The following diagram represents the solution of two sets P and Q on the number line:



Which of the following inequation has a set Q as its solution?

A. $2x + 9 \leq x + 14, x \in W$

B. $-11 \leq 3x - 2 \leq 4, x \in Z$

C. $8 - x < 4x - 2 \leq 6, x \in R$

D. $-42 < 6x + 42 \leq 3x + 45, x \in Z$

Answer: B

View Text Solution

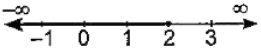
11. In linear inequations, the set, from which the value of the variable x is to be chosen is called the replacement set and its subset, whose

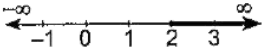
elements satisfy given inequation, is called the solution set of the linear inequation. Given

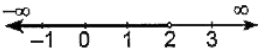
$A = \{x : 5x - 4 \geq 6, x \in R\}$ and $B = \{x : 5 - x > 1, x \in R\}$.

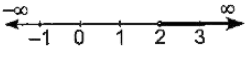
Answer the following questions:

The solution set of A on the number line is:

A. 

B. 

C. 

D. 

Answer: B

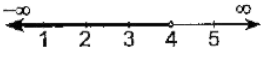
View Text Solution

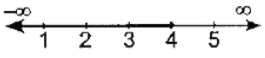
12. In linear inequations, the set, from which the value of the variable x is to be chosen is called the replacement set and its subset, whose elements satisfy given inequation, is called the solution set of the linear inequation. Given

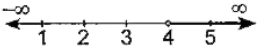
$A = \{x : 5x - 4 \geq 6, x \in R\}$ and $B = \{x : 5 - x > 1, x \in R\}$.

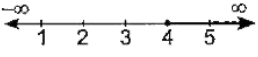
Answer the following questions:

The solution set of B on the number line is:

A. 

B. 

C. 

D. 

Answer: A

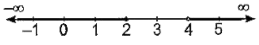
View Text Solution

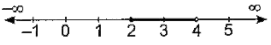
13. In linear inequations, the set, from which the value of the variable x is to be chosen is called the replacement set and its subset, whose elements satisfy given inequation, is called the solution set of the linear inequation. Given

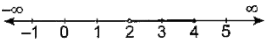
$A = \{x : 5x - 4 \geq 6, x \in R\}$ and $B = \{x : 5 - x > 1, x \in R\}$.

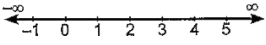
Answer the following questions:

On the number line, $A \cup B$ is:

A. 

B. 

C. 

D. 

Answer: D

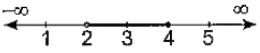
View Text Solution

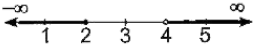
14. In linear inequations, the set, from which the value of the variable x is to be chosen is called the replacement set and its subset, whose elements satisfy given inequation, is called the solution set of the linear inequation. Given

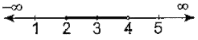
$A = \{x : 5x - 4 \geq 6, x \in R\}$ and $B = \{x : 5 - x > 1, x \in R\}$.

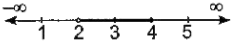
Answer the following questions:

On the number line, $A \cap B$ is

A. 

B. 

C. 

D. 

Answer: C

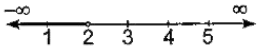
View Text Solution

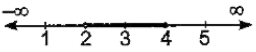
15. In linear inequations, the set, from which the value of the variable x is to be chosen is called the replacement set and its subset, whose elements satisfy given inequation, is called the solution set of the linear inequation. Given

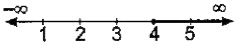
$A = \{x : 5x - 4 \geq 6, x \in R\}$ and $B = \{x : 5 - x > 1, x \in R\}$.

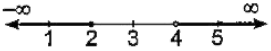
Answer the following questions:

On the number line, A-B is

A. 

B. 

C. 

D. 

Answer: B

View Text Solution