MATHS

BOOKS - PSEB

LINEAR INEQUALITIES

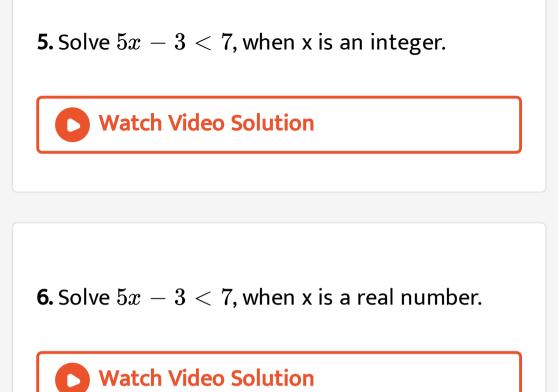**Exercise**

---

1. Solve $24x < 100$, when x is a natural number.

▶ Watch Video Solution

2. Solve $24x < 100$, when x is an integer.

▶ Watch Video Solution

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

▶ Watch Video Solution

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

▶ Watch Video Solution

5. Solve $5x - 3 < 7$, when x is an integer.

▶ Watch Video Solution

6. Solve $5x - 3 < 7$, when x is a real number.

▶ Watch Video Solution

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

▶ Watch Video Solution

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

▶ **Watch Video Solution**

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

$4x + 3 < 5x + 7$

▶ **Watch Video Solution**

10. Solve the inequalities given below for real x :-

$3x - 7 > 5x - 1$

11. Solve the inequalities given below for real x :-

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

▶ **Watch Video Solution**

12. Solve the inequalities given below for real x :-

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

▶ **Watch Video Solution**

13. Solve the inequalities given below for real x :-

$$x + \frac{x}{2} + \frac{x}{3} < 11$$

▶ Watch Video Solution

14. Solve the inequalities given below for real x :-

$$\frac{x}{3} > \frac{x}{2} + 1$$

▶ Watch Video Solution

15. Solve the inequalities given below for real x :-

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

▶ Watch Video Solution

16. Solve the inequalities given below for real x :-

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

▶ Watch Video Solution

17. Solve the inequalities given below for real x :-

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

▶ Watch Video Solution

18. Solve the inequalities given below for real x :-

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

▶ Watch Video Solution

19. Solve the inequalities given below for real x :-

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

20. Solve the inequalities given below for real x :-

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

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

$3x - 2 < 2x + 1$

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

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

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

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

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

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

25. Ravi obtained 70 and 75 marks in first two unit test. Find the minimum marks he should get in the third test to have an average of at least 60 marks.

26. 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.

27. Find all pairs of consecutive odd positive integers both of which are smaller than 10 such that their sum is more than 11.

28. Find all pairs of consecutive even positive integers, both of which are larger than 5 such that their sum is less than 23.
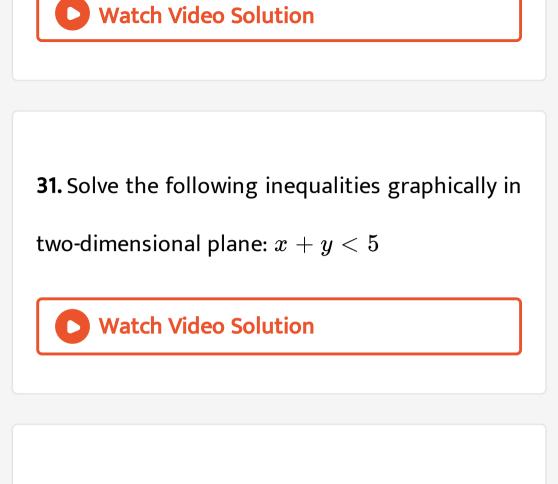
29. The longest side of a triangle is 3 times the shortest side and the third side is 2 cm shorter than the longest side. If the perimeter of the triangle is at least 61 cm, find the minimum length of the shortest side.

30. 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, $x + (x + 3) + 2x \leq 91$ and $2x \geq (x + 3) + 5$],

31. Solve the following inequalities graphically in two-dimensional plane: $x + y < 5$

32. Solve the following inequalities graphically in two-dimensional plane: $2x + y \geq 6$

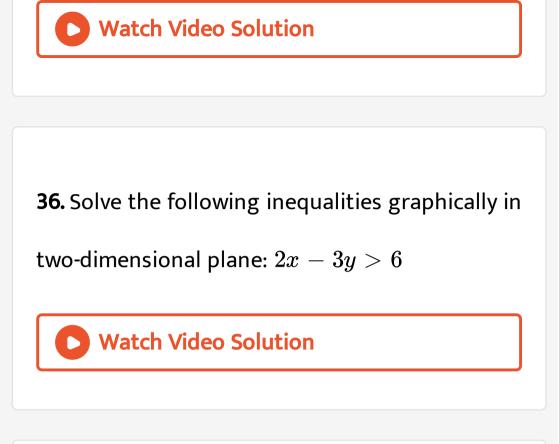**33.** Solve the following inequalities graphically in two-dimensional plane: $3x + 4y \leq 12$

▶ **Watch Video Solution**

34. Solve the following inequalities graphically in two-dimensional plane: $y + 8 \geq 2x$
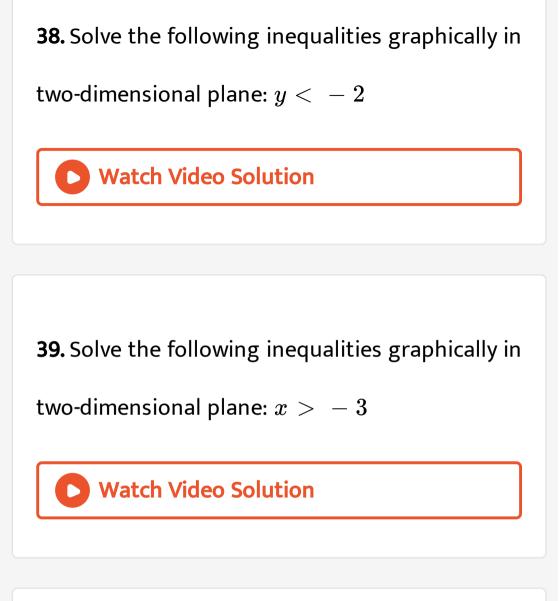
▶ **Watch Video Solution**

35. Solve the following inequalities graphically in two-dimensional plane: $x - y \leq 2$

36. Solve the following inequalities graphically in two-dimensional plane: $2x - 3y > 6$

37. Solve the following inequalities graphically in two-dimensional plane: $3y - 5x < 30$

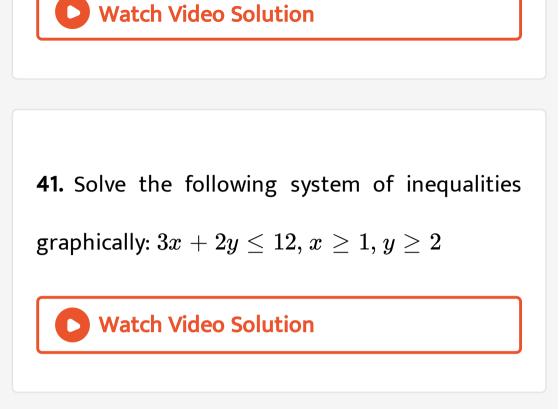**38.** Solve the following inequalities graphically in two-dimensional plane: $y < -2$

39. Solve the following inequalities graphically in two-dimensional plane: $x > -3$

40. Solve the following system of inequalities graphically: $x \geq 3, y \geq 2$

41. Solve the following system of inequalities graphically: $3x + 2y \leq 12$, $x \geq 1$, $y \geq 2$

42. Solve the following system of inequalities graphically: $2x + y \geq 6$, $3x + 4y \leq 12$
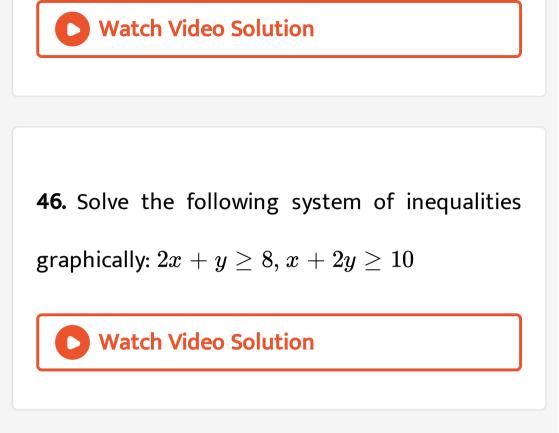
43. Solve the following system of inequalities graphically: $x + y \geq 4, 2x - y > 0$

44. Solve the following system of inequalities graphically: $2x - y > 1, x - 2y < -1$

45. Solve the following system of inequalities graphically: $x + y \leq 6, x + y \geq 4$

46. Solve the following system of inequalities graphically: $2x + y \geq 8, x + 2y \geq 10$

47. Solve the following system of inequalities graphically: $x + y \leq 9, y > x, x \geq 0$

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

49. Solve the following system of inequalities graphically:

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

50. Solve the following system of inequalities graphically:

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

51. Solve the following system of inequalities graphically:

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

52. Solve the following system of inequalities graphically:

$$4x + 3y \leq 60, \, y \geq 2x, \, x \geq 3, \, x, y \geq 0$$

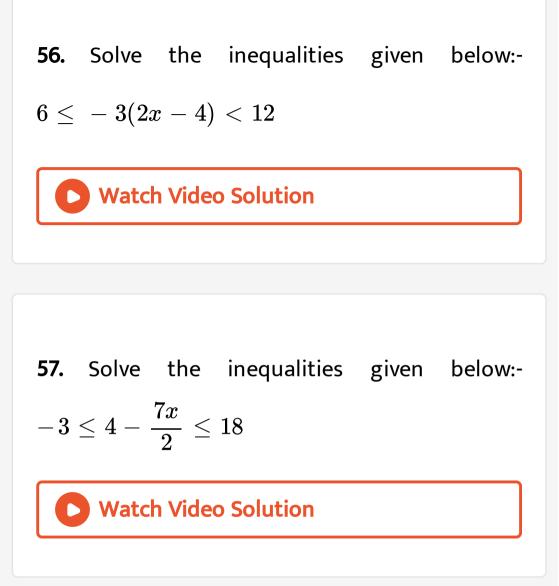**53.** Solve the following system of inequalities graphically:

$$3x + 2y \leq 150, \, x + 4y \leq 80, \, x \leq 15, \, y \geq 0, \, x \geq 0$$
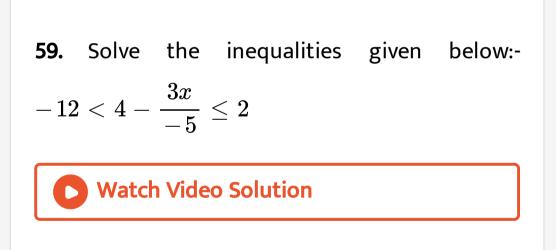
54. Solve the following system of inequalities graphically:

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

55. Solve the inequalities given below:-

$$2 \leq 3x - 4 \leq 5$$

56. Solve the inequalities given below:-

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

57. Solve the inequalities given below:-

$$-3 \leq 4 - \frac{7x}{2} \leq 18$$

58. Solve the inequalities given below:-

$$-15 < \frac{3(x-2)}{5} \leq 0$$

59. Solve the inequalities given below:-

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

60. Solve the inequalities given below:-

$$7 \leq \frac{(3x + 11)}{2} \leq 11$$

61. Solve the inequalities given below and represent the solution graphically on number line:- $5x + 1 > -24, 5x - 1 < 24$

62. Solve the inequalities given below and represent the solution graphically on number line:- $2(x - 1) < x + 5, 3(x + 2) > 2 - x$

▶ **Watch Video Solution**

63. 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**

64. Solve the inequalities given below and represent the solution graphically on number line:-

$$5(2x - 7) - 3(2x + 3) \leq 0, \, 2x + 19 \leq 6x + 47$$

65. A solution isto be kept between $68°$ F and $77°$ F. What isthe range in temperature in degree Celsius (C) if the Celsius / Fahrenheit (F) conversion formula is given by $F = \dfrac{9}{5}C + 32$?

66. 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**

67. How many litres of water will have to be added to 1125 litres of the 45% solution of acid

so that the resulting mixture will contain more than 25% but less than 30% acid content?

68. IQ of a person is given by the formula $IQ = \dfrac{MA}{CA} \times 100$, 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.