Ravi Maths Tuition

Linear Inequalities

11th Standard

Mathematics

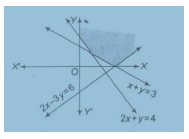
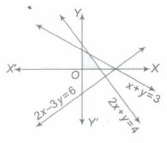
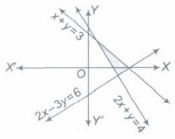
Multiple Choice Question 34 x 1 = 34

1) If a young man rides his motorcycle at 25 krn/h, he has to spend Rs 2 per km in petrol, and if he rides it at 40 krn/h, the petrol cost rises to Rs 5 per km. He has Rs 100 to spend on petrol and wishes to find the maximum distance, he can travel within one hour. If x and y denote the distance travelled by him (in krn) at 25 km/h and 40 krn/h, respectively. Then, inequations are _____.

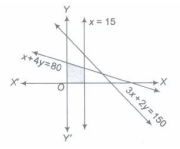
(a) $2x + 5y \leq 100, \frac{x}{25} + \frac{y}{40} \geq 1, x \geq 0, y \geq 0$ (b) $2x + 5y \geq 100, \frac{x}{25} + \frac{y}{40} \geq 1, x \geq 0, y \geq 0$

(c) $2x + 5y \leq 100, \frac{x}{25} + \frac{y}{40} \leq 1, x \geq 0, y \geq 0$ (d) $2x + 5y \leq 100, 25x + 40y \leq 1, x \geq 0, y \geq 0$

2) The solution set of the inequalities 2x + y $\geq$ 4,x + y $\leq$ 3, 2x - 3y $\leq$ 6 is _____.

(a)  (b)  (c)  (d) None of the above

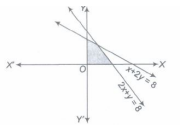
3) Which of the following represent the solution set in the following figure?



(a) $3x + 2y \geq 150, x + 4y \leq 80, x \leq 15, x, y \geq 0$ (b) $3x + 2y \leq 150, x + 4y \geq 80, x \geq 15, x, y \geq 0$

(c) $3x + 2y \leq 150, x + 4y \leq 80, x \leq 15, x, y \geq 0$ (d) None of the above

4) Which of the following solution set represent the following figure?



(a) $x + 2y \leq 8, 2x + y \leq 8, x \geq 0, y \geq 0$ (b) $x - 2y \leq 7, x + y \leq 8, x \geq 0, y \geq 0$

(c) $x + y < 82x + y < 8, r > 0y > 0$ (d) None of the above

5) Which of the following is/are true?

(a) A vertical line will divide the plane in left and right half planes

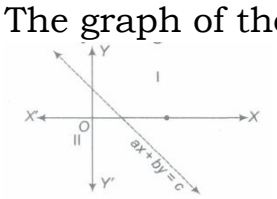
(b) A non-vertical line will divide the plane into left and right half planes (c) Both (a) and (b)

(d) None of the above

6) If a point P(a, β) on the line ax + by = c, then _____.

(a) $a\alpha + b\beta > c$ (b) \(a \alpha+b \beta (c) $a\alpha + b\beta = c$ (d) None of these

7) The graph of the inequality ax + by > c is represented by shading in the _____.

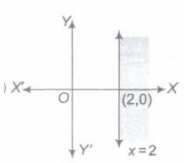
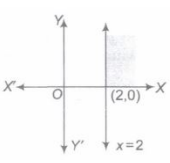
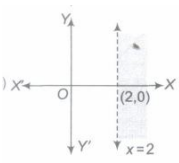
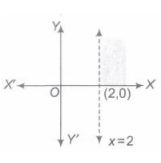


(a) half plane I including the point on ax + by = c (b) half plane II including the point on ax + by = c

(c) half plane I not including the point on ax + by =c

(d) half plane II not including the point on ax + by =c

8) The graphical solution of 3x - 6 $\geq$ 0 is _____.

(a)  (b)  (c)  (d) 

9) Consider the inequality $40x + 20y \leq 120$, where x and yare whole numbers. Then, its solution set is _____.

(a) (0, 0), (5, 5), (1, 1), (2, 2), (3, 0) (b) (0, 0), (0, 1), (0, 2), (0,3), (0, 4), (0, 5), (0, 6)

(c) (1,0), (2, 0), (3, 0), (4, 0), (5, 0) (d) None of the above

10) Ravi goes to market with Rs 200 to buy rice, which is available in packets of 1kg. The price of one packet of rice is Rs30. If x denotes the number of packets of rice which he buys, then the total amount spent by him is Rs 30x. The mathematical formulation of the given problem is _____.

(a) $30x > 200$ (b) $30x < 200$ (c) $30x \leq 200$ (d) $30x \geq 200$

11) The all pairs of consecutive even positive integers, both of which are larger than 5, such that their sum is less than 23, are _____.

(a) (2, 4), (5, 7) and (8, 10) (b) (3, 5), (6, 8) and (9, 11) (c) (6, 8), (8, 10) and (10, 12)

(d) None of the above

12) A company manufactures cassettes. Its cost and revenue functions are C(x) = 26000 + 30x and R(x) = 43x, respectively, where x is the number of cassettes produced and sold in a week. How many cassettes must be sold by the company to realise some profit?

(a) more than 2000 (b) less than 2000 (c) more than 5000 (d) less than 5000

13) In drilling world's deepest hole it was found that the temperature Tin degree celcius, x km below the earth's surface was given by T = 30 + 25 (x - 3),$3 \leq x \leq 15$.At what depth will the temperature be between 155°C and 205°C?

(a) 10 to 12 km (b) 8 to 10 km (c) 8 to 10 km (d) 15 to 18 km

14) The length of a rectangle is three times the breadth. If the minimum perimeter of the rectangle is 160 cm, then _____.

(a) breadth > 20 cm (b) length < 20 cm (c) breadth $\geq$ 20 cm (d) length $\leq$ 20 cm

15) The solution set of the inequality $\frac{x+3}{x+4} \geq 1$ is _____.

(a) $(-\infty, -4)$ (b) $(-\infty, 4)$ (c) $(-4, \infty)$ (d) $(4, \infty)$

16) The solution set of the inequality $|3x - 2| \leq \frac{1}{2}$, is _____.

(a) $\left[\frac{1}{2}, \frac{3}{2}\right]$ (b) $\left[\frac{1}{2}, \frac{3}{4}\right]$ (c) $\left[\frac{1}{2}, \frac{5}{3}\right]$ (d) $\left[\frac{1}{2}, \frac{5}{6}\right]$

17) Which of the following is the solution set of the inequality $\frac{x}{4} < \frac{(5x-2)}{3} - \frac{(7x-3)}{5}$?

(a) $(4, \infty)$ (b) $(-\infty, 4)$ (c) $[4, \infty)$ (d) $(-\infty, 4]$

18) x and b are real numbers. If b > 0 and |x| > b, then _____.

(a) $x \in (-b, \infty)$ (b) $x \in [-\infty, b)$ (c) $x \in (-b, b)$ (d) $x \in (-\infty, -b) \cup (b, \infty)$

19) The solution set of the inequality $\frac{1}{2}\left(\frac{3x}{5} + 4\right) \geq \frac{1}{3}(x - 6)$, is _____.

(a) $(-\infty, -120)$ (b) $(-\infty, 120)$ (c) $(-\infty, 120]$ (d) $[-\infty, 120)$

20) Which of the following is/are the examples of numerical inequalities?

I. 3 < 5

II. 7 > 5

III. x < 5

IV. Y > 2

V. $x \geq 3$

(a) I, II (b) III, IV (c) IV (d) All of these

21) The solution set of the inequality 4x + 3 < 6x + 7 is _____.

(a) $[-2, \infty)$ (b) $(-\infty, -2)$ (c) $(-2, \infty)$ (d) None of these

22) The set of real x satisfying the inequality $\frac{5-2x}{3} \leq \frac{x}{6} - 5$ is

(a) $(-\infty, 8)$ (b) $(8, \infty)$ (c) $[8, \infty)$ (d) $(-\infty, 8]$

23) If 3x + 8 > 2, then which of the following is true?

(a) x ∈ {-I, 0, 1,2, ... }, when x is an integer (b) x ∈ [-2,∞), when x is a real number

(c) Both (a) and (b) (d) None of the above

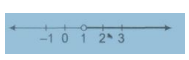
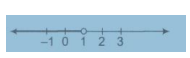
24) The solution set of the inequality $4x + 3 < 5x + 7 \forall x \in R$ is _____.

(a) $(-4, \infty)$ (b) $[-4, \infty)$ (c) $(4, \infty)$ (d) $[4, \infty)$

25) Two real numbers or two algebraic expressions related by the symbol '< ', ' > ', '≤' or '≥'forms an _____.

(a) equation (b) inequality (c) set (d) None of the above

26) The graph of the solutions of inequality $\frac{3x-4}{2} \geq \frac{x+1}{4} - 1$ on number line is _____.

(a)  (b)  (c)  (d) 

27) The solution set of $\frac{2x-1}{3} \geq \left(\frac{3x-2}{4}\right) - \left(\frac{2-x}{5}\right)$ is _____.

(a) $(-\infty, 2)$ (b) $(-\infty, 2]$ (c) $\left(-\infty, -\frac{1}{2}\right)$ (d) $\left(-\infty, -\frac{1}{2}\right]$

28) The set of values of x satisfying $2 \leq |x - 3| < 4$ is _____.

(a) $(-1, 1] \cup [5, 7)$ (b) $-4 \leq x \leq 2$ (c) \(-1 (d) $x < 7$ or $x \geq 5$ (e) \(-\infty

29) The solution set of the linear inequalities $-15 < \frac{3(x-2)}{5} \leq 0,$ is _____.

(a) (- 23, 2] (b) (- 20, 4) (c) [- 23, 2) (d) None of these

30) In an experiment, a solution of hydrochloric acid is to be kept between 30°C and 35°C.The range of temperature in degree Fahrenheit, if conversion formula is given byC $= \frac{5}{9}(F - 32)$ where Cand F represent temperature in degree Celsius and degree Fahrenheit respectively, is between _____.

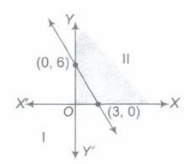
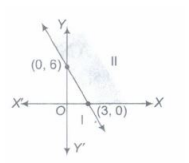
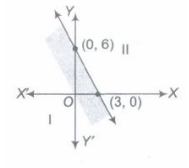
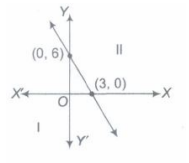
(a) 86°F and 95°F (b) 54°F and 63°F (c) 54°F and 95°F (d) 63°F and 86°F

31) A solution is to be kept between 68°F and 77°F. The range in temperature in degree Celsius (C), if the Celsius/Fahrenheit (F) conversion formula is given by $F = \frac{9}{5}C + 32$ is _____.

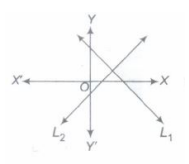
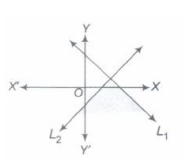
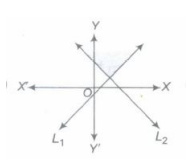
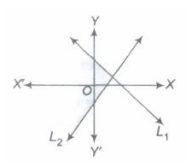
(a) between 20°C and 22°C (b) between 20°C and 25°C (c) between 36°C and 45°C

(d) between 4°C and 5°C

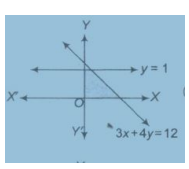
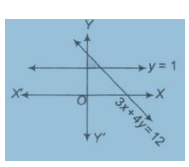
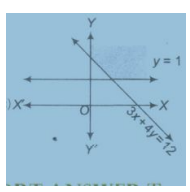
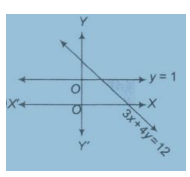
32) The graph of the inequality 40x +20y ≤ 120, x ≥ 0, y≥ 0 is _____.

(a)  (b)  (c)  (d) 

33) The graphical solution of linear inequalities x + y ≥ 5 and x - y ≤3 , where L_1 x + y = 5 and L_2 = x - y = 3 , is _____.

(a)  (b)  (c)  (d) 

34) The graphical solution of the system of linear inequalities 3x + 4y ≥ 12,y≥ 1,x ≥ 0 is _____.

(a)  (b)  (c)  (d) 

2 Marks 144 x 2 = 288

35) Solve -12x > 30, when

(i) x is a natural number.

(ii) x is an integer

36) Solve the inequalities : 2(2x + 3) -10< 6 (x - 2) for real x.

37) Solve 24x < 100, when
(i) x is a natural number.
(ii) x is an integer

38) Solve the inqualities $2 \leq 3x - 4 \leq 5$.

39) Solve the inequalities : $-12 < 4 - \frac{3x}{-5} \leq 2$.

40) Solve the inequalities $7 \leq \frac{(3x+11)}{2} \leq 11$.

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

42) 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 atleast 60 marks.

43) IQ of a person is given by the formula
IQ = $\frac{MA}{CA} \times 100$
where MA is mental age and CA is chronological age. If 80 ≤ IQ ≤ 140 for a group of 12 years old children, find the range of their mental age.

44) The longest side of a triangle is 3 times the shortest and the third side is 2 cm shorter than the longest side. If the perimeter of the triangle is atleast 61cm. Find the minimum length of the shortest side.

45) Solve 5x - 3 < 7 when
(i) x is an integer,
(ii) x is a real number

46) Solve 3x + 8 > 2 when
(i) x is integer
(ii) x is a real number

47) Solve the inequalities : 4x + 3 < 5x + 7

48) Solve the inequalities : 3x - 7 > 5x -1

49) Solve the inequalities : 3(x-1) $\leq$ 2(x-3)

50) Solve the inequalities : 3(2 - x)$\geq$ 2 (1-x)

51) Solve the inequalities : $x + \frac{x}{2} + \frac{x}{3} < 11$

52) Solve the inequalities $\frac{x}{3} > \frac{x}{2} + 1$

53) Solve the inequalities : $\frac{3(x-2)}{5} \leq \frac{5(2-x)}{3}$

54) Solve the inequalities : $\frac{1}{2}\left(\frac{3x}{5} + 4\right) \geq \frac{1}{3}(x - 6)$

55) Solve the inequalities : 37 - (3x + 5) $\geq$ 9x - 8(x - 3)

56) Solve the inequalities $\frac{x}{4} < \frac{(5x-2)}{3} - \frac{(7x-3)}{5}$

57) Solve the inequalities $\frac{(2x-1)}{3} \geq \frac{(3x-2)}{4} - \frac{(2-x)}{5}$

58) Solve the inequalities - 3x - 2 < 2x + 1

59) Solve the inequalities 5x -3 $\geq$ 3x - 5

60) Solve the inequalities 3(1- x)< 2 (x +4)

61) Solve the inequalities : $\frac{x}{2} \geq \frac{(5x-2)}{3} - \frac{(7x-3)}{5}$

62) 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

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

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

65) Solve 5x - 3 < 3x + 1 when
(i) x is an integer,
(ii) x is a real number

66) Solve the inequalities: $6 \leq -3\ (2x-4) < 12$

67) Solve the inequalities: $-3 \leq 4 - \frac{7x}{2} \leq 18$

68) Solve the inequalities: $-15 < \frac{3(x-2)}{5} \leq 0$

69) Solve the inequalities in graphically 5x +1 > -24, 5x - 1 < 24

70) Solve the inequalities in graphically 2(x - 1) < x + 5, 3(x + 2) > 2 - x

71) Solve the inequalities in graphically 3x - 7 > 2(x - 6), 6 - x > 11 - 2x

72) 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 lit res of the 8% solution, have many litres of the 2% solution will have to be added?

73) Solve 30 x < 200 when
(i) x is a natural number,
(ii) x is an integer.

74) Solve 4x + 3 < 6x +7.

75) Solve $\frac{5-2x}{3} \leq \frac{x}{6} - 5$.

76) Solve 7x + 3 < 5x + 9. Show the graph of the solutions on number line.

77) Solve $\frac{3x-4}{2} \geq \frac{x+1}{4} - 1$ Show the graph of the solutions on number line.

78) Solve $-8 \leq 5x - 3 < 7$.

79) Solve $-5 \leq \frac{5-3x}{2} \leq 8$.

80) Solve the system of inequalities:
$3x - 7 < 5 + x$ ... (1)
$11 - 5x \leq 1$ ... (2)
and represent the solutions on the number line.

81) In an experiment, a solution of hydrochloric acid is to be kept between 30° and 35° Celsius. What is the range of temperature in degree Fahrenheit if conversion formula is given by $C = \frac{5}{9}$ (F – 32), where C and F represent temperature in degree Celsius and degree Fahrenheit, respectively.

82) A manufacturer has 600 litres of a 12% solution of acid. How many litres of a 30% acid solution must be added to it so that acid content in the resulting mixture will be more than 15% but less than 18%?

83) Solve the inequality for real x,
4x + 3< 6x + 7.

84) Solve in the inequality 5x - 3 < 3x + 1, when x is an integer.

85) Solve in the inequality $3(x-1) \leq 2(x - 3)$ for real x.

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

87) Solve the linear inequality -5x + 25 > 0.

88) Solve -12x > 30, when x is an integer.

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

90) Solve the linear inequality 3x - 5 < x + 7, when x is a natural number

91) Solve the inequalities $6 \leq$ - 3(2x - 4) < 12.

92) Solve the linear inequality 3x - 5 < x + 7, when x is a whole number

93) Solve the linear inequality 3x - 5 < x + 7, when x is an integer.

94) Solve the linear inequality 3x - 5 < x + 7, when x is a real number.

95) Solve 24x < 100, when x is an integer.

96) Solve the inqualities - $3 \leq 4 - \frac{7x}{2} \leq 18$.

97) Solve $|3x - 2| \leq \frac{1}{2}$

98) Solve the inequality $\frac{5-3x}{3} \leq \frac{x}{6}$ - 5.

99) Solve $|x - 2| \geq 6$.

100) Solve the inquality $\frac{1}{x-4} < 0$.

101) Solve the following system of inequation. x + 2 > 0 and 3x -8 < 1

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

103) Solve $|x - 1| \leq 2$.

104) The cost and revenue functions of a product are given by C(x) = 20x + 4000 and R(x) - 60x + 2000 respectively, where x is the number of items produced and sold. How many items must be sold to realise some profit?

105) Solve $|x + 3| \geq 10$.

106) Solve $|3x - 7| > 2$.

107) Solve $|3 - 4x| \geq 9$.

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

109) A solution is to be kept between 40°C and 45°C. What is the range of temperature in degree Fahrenheit, if the conversion formula is F = $\frac{9}{5}$C + 32?

110) Anu needs a minimum of 450 marks in five tests in statistics course to obtain B grade. In her first four tests, She scored 90, 94, 96 and 88 marks. What should her score be in the 5 th test, so that she can make B grade

111) In the first four papers each of 100 marks, Rahul got 95, 72, 73 and 83 marks. If he wants an average of greater than 75 marks and less than 80 marks. Find the range of marks he should score in the fifth paper.

112) A company manufactures cassettes and its cost equation for a week is C = 300 + 1.5 x and its revenue equation is R = 2 x, where x is the number of cassettes sold in a week. How many cassettes must be sold for the company to realise a profit?

113) In drilling world's deepest hole it was found that the temperature T in degree Celcius x km below the Earth's surface was given by T (x) = 30 + 25(x - 3), where $3 \leq$ x $\leq$ 15. At what depth will the temperature be between 155° C and 205° C?

114) Check whether the half plane x + 2y $\geq$ 4 contains origin.

115) Check whether the plane $5x + 2y \leq 5$ contains origin or not

116) Check whether the given plane $3x - 6y \leq 0$ contains the point (3,1).

117) A person was not feeling well, so he went to a doctor. Doctor on examination found that his temperature varies between 30°C to 35°C.What is the range of temperature in degree Fahrenheit? Do you think his temperature is normal? If not, what is normal temperature of body in Fahrenheit? Does he need medical attention?
Use conversion formula, $F = \frac{9}{5} C + 32$

118) To pass in a subject, one must obtain an average of 33 (out of 100) or higher in five examinations of the subject. If a student's marks in the four examinations of a subject are 28, 31, 40, and 37, then find the minimum marks a student must obtain in fifth examination to pass in the subject. A student obtained 42 marks in the fifth examination by working hard and trying his best in the examination. Do you think student has passed in the subject? What value system does he possesses?

119) Solve $12 + 1\frac{5}{6}x \leq 5 + 3x$, When $x \in N$

120) Solve $12 + 1\frac{5}{6}x \leq 5 + 3x$, When $x \in R$.

121) Solve for $x : 4x + 3 \geq 2x + 17, 3x - 5 < -2$.

122) Solve the following system of linear inequalities.
$\frac{4x}{3} - \frac{9}{4} < x + \frac{3}{4} and \frac{7x-1}{3} - \frac{7x+2}{6} > x$

123) Solve for x: $-5 \leq \frac{2-3x}{4} \leq 9$

124) Solve $2x - 1 > x + \frac{7x-1}{3} > 2, \in R$.

125) Anushu obtained 73, 67, 72 marks in the Mathematics test. How many should he get in his fourth test, so as to have an average of at least 75?

126) Solve the inequality$3(2-x) \geq 2(1-x)$ and show the graph of solution on number line.

127) Solve $18x < 150$ when (i) x is a natural number (ii) x is an integer

128) Solve the inequation $3x + 17 \leq 2(1-x)$

129) Solve the inequation $\frac{2x-3}{4} + 9 \geq 3 + \frac{4x}{3}$ and show the graph of the solution on number line.

130) Find all pairs of consecutive even positive integers both of which are larger than 10 such that their sum is less than 28.

131) Solve $-12x > 30$ When
(i) x is a natural number
(ii) x is an integer

132) Solve $6x < 24$ When (i) x is a natural number (ii) x is an integer

133) Solve $- 4x > 18$ when (i) x is a natural number (ii) x is an integer

134) Solve $4x - 2 < 8$ when (i) x is an integer (ii) x is a real number

135) Solve the following linear in equations: $4x - 12 \geq 0$

136) Solve the following linear in equations: $2x + 8 < 0$

137) Solve the following linear in equations $7x + 9 > 30$

138) Solve the inequalities: $2(2x + 3) - 10 \leq 6(x - 2)$

139) Solve the inequalities: $\frac{5x-2}{3} - \frac{7x-3}{5} > \frac{x}{4}$

140) Solve the inequalities: $\frac{x-1}{3} + 4 < \frac{x-5}{5} - 2$

141) Solve the inequalities: $\frac{4+2x}{3} \geq \frac{x}{2} - 3$

142) Solve the inequalities: $\frac{2x+3}{5} - 2 < \frac{3(x-2)}{5}$

143) Solve the inequalities: $\frac{x-1}{x+5} > 2$

144) Find all pairs of consecutive odd positive integers, both of which are smaller than 15 such that their sum is more than 18.

145) The cost and revenue functions of a product are given by C(x) = 2x + 400 and R(x) = 6x + 20 respectively, where x is the number of items produced. How many items the manufacturer must sell to realise some profit?

146) In the first four papers each of 100 marks, Sujata got 90, 75, 73, 85 marks. If she wants an average of greater than or equal to 75 marks and less than 80 marks, find the range of marks she should score in the fifth paper.

147) Solve the inequalities graphically x + y < 5

148) Solve the inequalities graphically 2x +y $\geq$ 6

149) Solve the inequalities graphically x -y $\leq$ 2

150) Solve the inequalities graphically 2x - 3y > 6

151) Solve the inequalities Graphically -3x + 2y $\geq$ -6

152) Solve the inequalities Graphically 3y - 5x < 30

153) Solve the inequalities Graphically y < - 2

154) Solve the inequalities Graphically x > -3

155) Solve the Systems of inequality graphically: x $\geq$3,y $\geq$2

156) Solve 15x< 63 when (i) x is an integer (ii) x is an natural number

157) Solve -6x > 42 when (i) x is an integer (ii) x is a natural number

158) Solve 7x -8 < 13 when (i) x is an integer (ii) x is a natural number

159) Solve the liner inequations 5x - 6 > 2x + 3

160) Solve the liner inequations x + 7 $\geq$ - 3x + 19

161) Solve the liner inequations $\frac{2x+3}{4} - 3 > \frac{x-4}{3} - 2$

162) Solve the liner inequations $\frac{5x+8}{4-x} < 2$

163) The marks scored by Sujata in two tests were 65 and 70. Find the minimum marks she should score in the third test to have an average of at least 65 marks.

164) A solution of 9% acid is to be diluted by adding 3%acid solution to it. The resulting mixture is to be more than 5%but less than 7% acid. If there is 460 litres of the 9% solution, how many litres of 3%solution will have to be added?

165) Solve the Linear inequations (i) 2x - 4 $\leq$ 0, (ii) -5x + 15 < 0

166) Solve the following inequations: $\frac{2x-3}{4} + 19 \geq 13 + \frac{4x}{3}$

167) Solve the inequation $\frac{x+3}{x-2} \geq 4$

168) Solve the inequation $\frac{2x+4}{x-3} \leq 4$

169) Find the pairs of consecutive even positive integers which are larger than 5and are such that their sum is less than 20

170) Solve the inequalities: $2 \leq$ 3x - 4 ≤ 5

171) Solve the inequalities: $-12 < 4 - \frac{3x}{-5} \leq 2$

172) Solve the inequalities: $7 \leq \frac{(3x+11)}{2} \leq 11$

173) Solve the inequality 5x - 1 > 3x + 7 and show the graph of the solution on number line.

174) Solve the inequality $\frac{x}{3} > \frac{x}{2} + 1$ and show the graph of the solution on number line.

175) Ram needs a minimum of 360 marks in four tests in a Mathematics course to obtain Agrade. In his first three tests, he scored 88, 96 and 79 marks. What should his score be in the fourth test, so that he can make A grade?

176) In the first four examinations, each of 100 marks, Mohan got 94, 73, 72 and 84 marks. If a final average greater than or equal to 80 and less than 90 is needed to obtain a final grade B in a course, then what range of marks in the fifth (last) examination will result, if Mohan receiving grade B in the course?

177) The sum of three consecutive integers must not be more than 12. What are the integers?

178) 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 titres of the 8% solution, how many titres of the 2% solution will have to be added?

3 Marks 74 x 3 = 222

179) Find all pairs of consecutive odd natural numbers, both of which are larger than 10, such that their sum is less than 40.

180) A solution is to be kept between 68^0 F and 77^0F. What is the range of temperature in degree Celsius (C), if the Celsius/Fahrenheit (F) conversion formula is given by F=$\frac{9}{5}C + 32$?

181) A man wants to cut three lengths from a single piece of board of length 91 cm, the second length is to be 3 cm longer than the shortest and third length is to be twice as long as the shortest. What are the possible lengths for the shortest board, if 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 ≤ 91 and 2x ≥ (x + 3) + 5].

182) Solve the inequalities in graphically 5(2x-7) -3 (2x + 3) $\leq$0, 2x +19 $\leq$ 6x +47

183) Solve the following system of insqualities 7(2-3x) > 18-19x and 5+3x < 5x+6.

184) Solve for x, $\frac{1}{|x|-3} < 0$

185) Solve for x, $\frac{4}{x+1} \leq 3 \leq \frac{6}{x+1'} x > 0$

186) The sum of four consecutive integers must not be more than 22. What are the integers?

187) Find all the pairs of consecutive positive integers, both of which are larger than 8 such that their sum is less than 28.

188) Find all pairs of consecutive odd positive integers, both of which are smaller than 18, such that their sum is more than 20.

189) A solution is to be kept between 86° F and 95° F What is the range of temperature in degree Celsius, if the Celsius (C)/ Fahrenheit (F)
Conversion formula is given by F = $\frac{9}{5}$ C + 32.

190) In an experiment, a solution of hydroelectric acids is to be kept between 30°C and 35°C. What is the range of temperature in degree Fahrenheit, if conversion formula is given by F = $\frac{9}{5}$ C + 32, where C and F represent temperature in degree Celsius and degree Fahrenheit, respectively.

191) A solution of 9% acid is to be diluted by adding 3% acid solution to it. The resulting mixture is to be more than 5% but less than 7% acid. If there is 460 liters of the 9% solution. How many liters of 3 % solution will have to be added?

192) Solve the following system of inequalities.
$\frac{2x+1}{7x-1}$ > 5, $\frac{x+7}{x-8}$ > 2

193) Solve the inequality $|\frac{2}{x-4}| > 1; x \neq 4.$

194) Solve $|\frac{2}{x-4}| < 1$.

195) A company manufactures cassettes. Its cost and revenue functions are C(x) = 26000 + 30x and R(x) = 43x, respectively, where x is the number of cassettes produced and sold in a week. How many cassettes must be sold by the company to realise some profit?

196) The water acidity in a pool is considered normal when the average pH reading of three daily measurements is between 8.2 and 8.5. If the two pH readings are 8.48 and 8.35, find the range of pH value for the third reading that will result in the acidity level being normal.

197) The length of rectangle is three times the breadth. If the minimum perimeter of the rectangle is 160cm, then find the shortest value for its breadth.

198) A manufacturer has 600 L of a 12% solution of acid. How many litres of a 30% acid solution must be added to it so that acid content in the resulting mixture will be more than 15% but less than 18%?

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

200) The cost and revenue functions of products given by C(X)=20+4000 and R(X)=60+2000 respectively, where x is the number of items produced and sold. How many items must be sold to realise some profit?

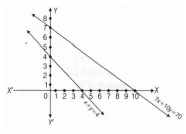
201) Solve the following system of inequalities 2x-3< 7 and 2x > -4. Also, represent the solution graphically on the number line.

202) A solution is to be kept between 40^0C and 45^0C. What is the range of temperature in degree Fahrenheit, if the conversion formula is $F = \frac{9}{5}C + 32$

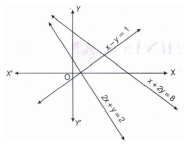
203) The longest side of a triangle is twice the shortest side and the third side is 2cm longer than the shortest side. If the perimeter of the triangle is more than 166cm then find the minimum length of the shortest side.

204) Solve the inequalities $x \geq 3 \; and \; y \geq 2$ graphically.

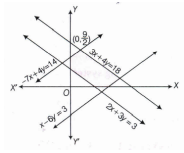
205) Find the linear inequalities for which the shaded area in figure below is a solution set.



206) Find the linear inequalities for which the shaded region in given figure is a solution set.



207) Find the linear inequalities for which the shaded region in the given figure is the solution set.



208) Solve graphically $4x + 3y \geq 12 \quad and \quad 4x - 5y \geq -20$

209) Solve the following system of inequalities graphically.
$x + y \leq 4, 2x - y > 0, x \geq 0 \quad and \quad y \geq 0.$

210) Solve graphically $x - y \leq 2; x + 2y \leq 8; x, y \geq 0$

211) Solve the in equality x+y$\geq$5 graphically.

212) Solve the inequality x > -3 graphically in two-dimensional plane.

213) Solve the inequality y > -2 graphically in two-dimensional plane.

214) Solve for $x : \frac{x-3}{x-5} > 0$

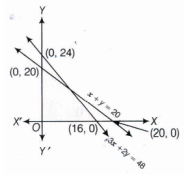
215) Solve $|x| < 4$ and represent the sollution set on number line.

216) Check whether the half plane $3x + 6y \geq 0$ contains (1,1). If so, shade the plane containing (1,1).

217) Solve the inequalities $3x + 2y \leq 12, x \geq 1$ *and* $y \geq 2$ graphically.

218) Solve the inequalities $x + y \leq 9, y > x$ *and* $x \geq 1$ graphically.

219) Find the linear inequalities for which the shaded region on the given figure is the solution set.



220) Solve the following inequality graphically $|x - y| \geq 1$.

221) Solve the inequality 2x+y > 3 graphically

222) Check whether the half plane $x + 2y \geq 4$contains origin.
Put x=y=0.If the inequality is true, then half plane contains the origin otherwise not.

223) Draw the graph of the inequality $y + 8 \geq 2x$.

224) Solve the inequality 5x+2y$\leq$10 graphically

225) Solve 4x-y > 0 graphically.

226) Solve 3x + 2y > 6 graphically.

227) Solve 3x – 6 $\geq$ 0 graphically in two dimensional plane.

228) Solve y < 2 graphically.

229) Solve the following inequalities graphically in two-dimensional plane:
x + y < 5

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

231) Solve the given inequality graphically in two-dimensional plane: $3x + 4y \leq 12$

232) Solve the given inequality graphically in two-dimensional plane: $y + 8 \geq 2x$

233) Solve the given inequality graphically in two-dimensional plane: x – y ≤ 2

234) Solve the given inequality graphically in two-dimensional plane: $2x - 3y > 6$

235) Solve the given inequality graphically in two-dimensional plane: $-3x + 2y \geq -6$

236) Solve the given inequality graphically in two-dimensional plane: $3y - 5x < 30$

237) Solve the given inequality graphically in two-dimensional plane: $y < -2$

238) Solve the given inequality graphically in two-dimensional plane: $x > -3$

239) Solve the following system of linear inequalities graphically.
x + y $\geq$5 ... (1)
x – y $\leq$ 3 ... (2)

240) Solve the following system of inequalities graphically
5x + 4y $\leq$ 40 ... (1)
x $\geq$ 2 ... (2)
y $\geq$ 3 ... (3)

241) Solve the following system of inequalities
8x + 3y $\leq$ 100 ... (1)
x $\geq$ 0 ... (2)
y $\geq$ 0 ... (3)

242) Solve the following system of inequalities graphically
x + 2y $\leq$ 8 ... (1)
2x + y $\leq$ 8 ... (2)
x $\geq$ 0 ... (3)
y $\geq$ 0 ... (4)

243) Solve the inequality $\frac{x}{2} \geq \frac{(5x-2)}{3} - \frac{(7x-3)}{5}$ and show the graph of the solution on number line.

244) Solve graphically for $x, |x-1| \leq 5, |x| \geq 2$

245) Solve $|x-1| + |x-2| \geq 4$.

246) Solve the inequality $\frac{|x|-1}{|x|-2} \geq 0, x \in R$ and $x \neq \pm 2$

247) Solve for x, $\frac{|x+3|+x}{x+2} > 1$

248) Solve the following system of inequalities and represent the solution graphically on number line.
3x - 7 > 2(x - 6) and 6 - x > 11- 2x

249) Solve the inequality $\frac{x+8}{x-2} \geq 0$ and show the solution on number line.

250) Solve 4x - 6 $\geq$ 0 graphically in two dimensional plane.

251) Solve the inequality 5y - 3 $\leq$ 12 graphically.

252) Solve the following inequalities graphically.$y \leq 4, x \geq 1$.

5 Marks 39 x 5 = 195

253) 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?

254) Solve the following system of linear inqualities $-2 - \frac{x}{4} \geq \frac{1+x}{3}$ and $3 - x < 4(x - 3)$

255) Solve the inequality $\frac{2x+5}{x-1} > 5$

256) Solve $1 \leq |x-2| \leq 3$.

257) Solve for $x, |x+1| + |x| > 3$

258) Solve for $x, \frac{|x-2|-1}{|x-2|-2} \leq 0$

259) Solve the following inequalities$2x + y \geq 4, x + y \leq 3 \quad and \quad 2x - 3y \leq 6$graphically.

260) Solve the system of inequlities graphically, $x + y \leq 4, 3x + 4y \geq 4, x \leq 3, y \leq 2$

261) Solve graphically the following system of inequalities.
$x + 2y \leq 3; 3x + 4y \geq 12, x \geq 0 \quad and \quad y \geq 1$

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

263) Solve the inequality 2x + 3y > 0 graphically.

264) Solve the inequalities graphically 3x +4y $\leq$ 12 $x \geq 1$, $y \geq 2$

265) Solve the inequalities graphically: 2x +y $\geq$ 6, 3x +4y $\leq$12

266) Solve the inequalities graphically x+y $\geq$ 4, 2x - y > 0

267) Solve the inequalities graphically 2x - y > 1, 2y < -1

268) Solve the inequalities graphically x +y $\leq$ 6, x + y $\geq$ 4

269) Solve the inequalities graphically 2x +y $\geq$ 8,x + 2y $\geq$ 10

270) Solve the inequalities graphically x + y $\leq$ 9, y > x, x $\geq$ 0

271) Solve the inequalities graphically - 5x +4y $\leq$ 20, x $\geq$ 1, y $\geq$ 2

272) Solve the inequalities graphically 3x +4y $\leq$ 60, x +3y $\leq$ 30, x $\geq$0, y $\geq$ 0

273) Solve the inequalities graphically 2x +y $\geq$ 4, x + y $\leq$ 3, 2x -3y $\leq$ 6

274) Solve the inequalities graphically x -2y $\leq$3, 3x +4y $\geq$12, x$\geq$0, y$\geq$1

275) Solve the inequalities graphically 4x+3y$\leq$60, y$\geq$2x, x$\geq$3, x,y$\geq$0

276) Solve the inequalities graphically 3x+2y$\leq$150, x+4y$\leq$80, x$\leq$15, y$\geq$0,x$\geq$0

277) Solve the inequalities graphically x +2y$\leq$10,x+y$\geq$1,x-y$\leq$0,x$\geq$0,y$\geq$0

278) Solve the following inequality and show the graph of the solution in each case on number line.
$(i)\frac{x}{4} < \frac{5x-2}{3} - \frac{7x-3}{5}$
$(ii)x + \frac{x}{2} + \frac{x}{3} < 11$
$(iii)\frac{1}{2}\left(\frac{3}{5}x + 4\right) \geq \frac{1}{3}(x - 6)$
$(iv)\frac{(2x-1)}{3} \leq \frac{(3x-2)}{4} - \frac{(2-x)}{5}$

279) Solve the following system of linear inequalities and represent the solution graphically on the number line. 2(2x + 3) -10 < 6 (x - 2) and $\frac{2x-3}{4} + 6 \geq 2 + \frac{4x}{3}$

280) Solve the inequality $\frac{x-2}{x+5} > 2$, Also represent the solution on the number line.

281) Solve the inequality $\frac{x-4}{x+2} \leq 2$, Also represent the solution on number line.

282) Solve the inequality $\frac{-3x+10}{x+1} > 0$, Also represent the solution on the number line.

283) Solve the inequality $\frac{x+3}{x+4} \geq 1$ and show the solution on the number line.

284) Solve the following system of inequalities.
$\frac{x}{2x+1} \geq \frac{1}{4}$ and $\frac{6x}{4x-1} < \frac{1}{2}$

285) Solve the inequality x $\leq$ 8 - 4y graphically

286) Solve the inequality 3x - 2y + 4 $\leq$ x + y - 8 graphically.

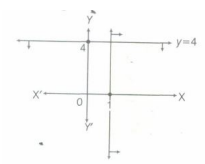
287) Solvethe system of inequalities graphically
$x + y > 6; 2x - y < 0$

288) Solve the system of inequalities graphically.
$x + y \leq 5$
$4x + y \geq 4$
$x + 5y \geq 5$
$x \leq 4$ and
$y \leq 3$

289) Solve the following inequalities graphically.
$3x + 2y \leq 12,$
$x + y \geq 8,$
$-x + y \geq 4,$
$5x \leq 10;$
$x, y \geq 0$

290) Solve the' inequalities $|y - x| \leq 3$, graphically.

291) Find the linear inequalities for which the shaded region in the given figure is the solution set.



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