








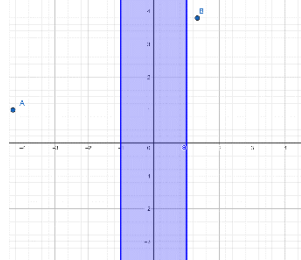
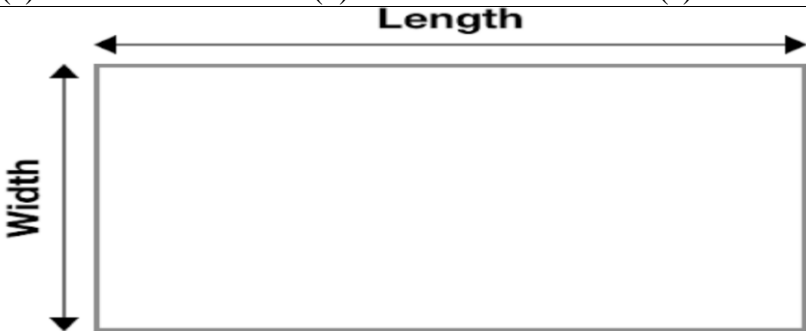




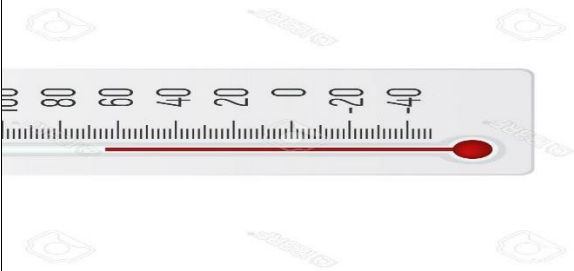
**CHAPTER-6**  
**LINEAR INEQUALITIES**  
**01 MARK TYPE QUESTIONS**


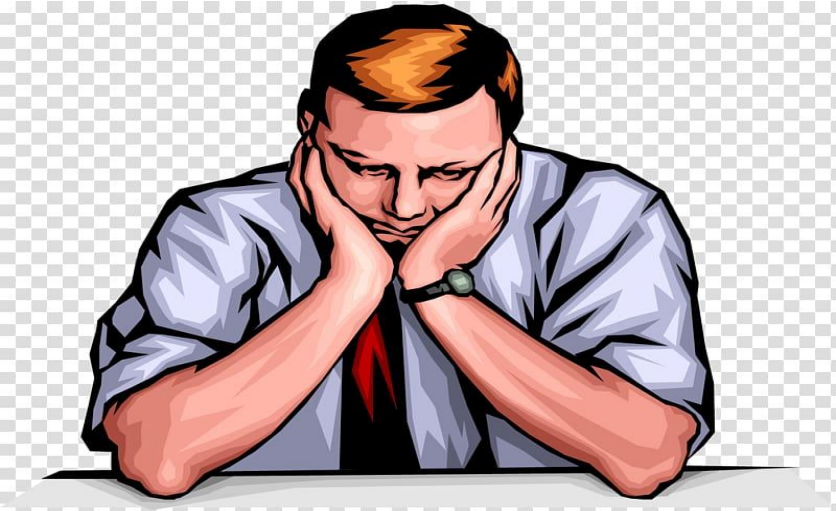
Q. NO	QUESTION	MARK
1.	<p>Ram has 6 more mangos than Rahim. If they have more than 100 mangoes.</p>   <p>What is the minimum number of mangoes does Rahim have? (a) 46                      (b) 47                      (c) 48                      (d) 49</p>	1
2.	<p>In a garden there are two types of plants Rose &amp; Jasmine with maximum 500 plants.</p>   <p>The ratio of Rose and Jasmine plants are in the ratio 2 : 3. What is the maximum number of Rose plants? (a) 200                      (b) 300                      (c) 350                      (d) 400</p>	1
3.	<p>A furniture dealer deals in only two items—tables and chairs. He has Rs60,000 to invest and has storage space of at most 100 pieces. A table costs Rs3000 and a chair Rs1000.</p>   <p>Let x be the number of tables and y be the number of chairs that the dealer buys. Which of the following represents the investment constraint/ inequality. (a) <math>3000x + 1000y \leq 60000</math> (b) <math>3000x + 1000y &lt; 60000</math> (c) <math>3000x + 1000y \geq 60000</math> (d) <math>3000x + 1000y &gt; 60000</math></p>	1
4.	<p>A furniture dealer deals in only two items—tables and chairs. He has Rs 60,000 to invest and has storage space of at most 100 pieces. A table costs Rs 3000 and a chair Rs 1000. Let x be the number of tables and y be the number of chairs that the dealer buys. Which of the following represents the storage constraint/ inequality. (a) <math>x + y \leq 100</math>                      (b) <math>x + y &lt; 100</math> (c) <math>x + y &gt; 100</math>                      (d) <math>x + y \geq 100</math></p>	1
5.	<p>A dietician wishes to mix two types of foods in such a way that vitamin contents of the mixture contain at least 8 units of vitamin A and 10 units of vitamin C. Food 'I' contains 2 units/kg of vitamin A and 1 unit/kg of vitamin C. Food 'II' contains 1 unit/kg of vitamin A and 2 units/kg of vitamin C.</p>  <p>Let the mixture contain x kg of Food 'I' and y kg of Food 'II'. Which of the following is true? (a) <math>x \geq 0, y &lt; 0</math>                      (b) <math>x \geq 0, y \geq 0</math> (c) <math>x &gt; 0, y &gt; 0</math>                      (d) <math>x &lt; 0, y &lt; 0</math></p>	1

6.	<p>A dietician wishes to mix two types of foods in such a way that vitamin contents of the mixture contain at least 8 units of vitamin A and 10 units of vitamin C. Food 'I' contains 2 units/kg of vitamin A and 1 unit/kg of vitamin C. Food 'II' contains 1 unit/kg of vitamin A and 2 units/kg of vitamin C. Let the mixture contain x kg of Food 'I' and y kg of Food 'II'. Which of the following is inequality can be represented for Vitamin A ?</p> <p>(a) <math>2x + y &gt; 8</math> (b) <math>2x + y &lt; 8</math>  (c) <math>2x + y \geq 8</math> (d) <math>2x + y \leq 8</math></p>	1
7.	<p>The digits in the tens place of a two digit number is 3 more than the digit in the unit place.</p>  <p>Let the digit at unit place be b. If the number is less than 100 then</p> <p>(a) <math>11b + 30 &lt; 100</math> (b) <math>10b + 30 &lt; 100</math>  (c) <math>11b + 3 &lt; 100</math> (d) <math>10b + 3 &lt; 100</math></p>	1
8.	<p>An aeroplane can carry a maximum of 250 passengers. The airline reserves at least 30 seats for executive class.</p>  <p>If x is the number of seats reserved for executive class then</p> <p>(a) <math>x \geq 30</math> (b) <math>x &gt; 30</math> (c) <math>x = 30</math> (d) <math>x \leq 30</math></p>	1
9.	<p>An aeroplane can carry a maximum of 300 passengers. The airline reserves at least 30 seats for executive class. However, at least 5 times as many passengers prefer to travel by economy class than by the executive class. If x passengers travel by executive class and y passengers by economic then which of the following is true?</p> <p>(a) <math>y = 5x</math> (b) <math>y - 5x \geq 0</math> (c) <math>y - 5x \leq 0</math> (d) <math>y - 5x &gt; 0</math></p>	1
10.	<p>A company manufactures two types of novelty souvenirs made of plywood. Souvenirs of type A require 5 minutes each for cutting and 10 minutes each for assembling. Souvenirs of type B require 8 minutes each for cutting and 8 minutes each for assembling. There are 3 hours 20 minutes available for cutting and 4 hours for assembling. Let the company manufactures x number of Souvenirs of type A and y number of Souvenirs of type B. Which of the following inequality is true for cutting?</p> <p>(a) <math>5x + 8y &lt; 200</math> (b) <math>5x + 8y &gt; 200</math>  (c) <math>5x + 8y \leq 200</math> (d) <math>5x + 8y \geq 200</math></p>	1
11.	 <p>The graph given in the figure is of</p> <p>a. <math>x &lt; 1</math>  b. <math>x &gt; 1</math>  c. <math> x  \leq 1</math>  d. <math> x  \geq 1</math></p>	1
12.	<p>The interval <math>(-3, \infty)</math> is contained in the solution of ?</p> <p>a. <math>x &gt; -3</math></p>	1





	<p>The inequality represented in the graph is given by  (a) <math>y \leq 2</math>      (b) <math>y = 2</math>      (c) <math>y &gt; 2</math>      (d) <math>y &lt; 2</math></p>	
22.	<p>A furniture dealer deals in two items ,tables and chairs.He has ₹ 30,000 to invest and a space to store atmost 60 pieces.A table cost him ₹ 1500 and a chair ₹ 300.The data Formulated in the form of an inequation will be</p> <p>(a) <math>1500x + 300y &gt; 30000; x + y &lt; 60, x \geq 0, y \geq 0</math>  (b) <math>1500x + 300y \geq 30000; x + y \geq 60, x \geq 0, y \geq 0</math>  (c) <math>1500x + 300y \leq 30000; x + y \geq 60, x \geq 0, y \geq 0</math>  (d) <math>1500x + 300y \leq 30000; x + y \leq 60, x \geq 0, y \geq 0</math></p>	1
23.	<p>If <math>-x - 8 \leq 3</math> then the value of <math>x</math> is  (a) <math>x \leq 11</math>                      (b) <math>x \leq -11</math>                      (c) <math>x \geq -11</math>                      (d) <math>x \geq 11</math></p>	1
24.	<div style="text-align: center;">  </div> <p>The length of a rectangle is three times the breadth. If the minimum perimeter of the rectangle is 160 cm, then</p> <p>(a) breadth <math>&gt; 20</math> cm                      (b) length <math>&lt; 20</math> cm                      (c) breadth <math>x \geq 20</math> cm  (d) length <math>\leq 20</math> cm</p>	1
25.	<p>Solution set for inequality <math>\frac{1}{x-2} &lt; 0</math> is</p> <p>(a) <math>(2, \infty)</math>      (b) <math>\phi</math>      (c) <math>(0, 2)</math>      (d) <math>(-\infty, 2)</math></p>	1
26.	<p>If <math>\frac{(x-3)}{(x-2)} &gt; 0</math> then <math>x</math> belongs to</p> <p>(a) <math>(-\infty, 2) \cup [3, \infty)</math>                      (b) <math>(-\infty, 2] \cup [3, \infty)</math>                      (c) <math>(2, 3)</math>  (d) <math>(-\infty, 2) \cup (3, \infty)</math></p>	1
27.	<p>Solutions of the inequalities comprising a system in variable <math>x</math> are represented on number lines as given below the Fig</p> <div style="text-align: center;">  </div> <p style="text-align: center;"><b>Fig 6.2</b></p> <p>(A) <math>x \in (-\infty, -4] \cup [3, \infty)</math>                      (B) <math>x \in [-3, 1]</math>  (C) <math>x \in (-\infty, -4) \cup [3, \infty)</math>                      (D) <math>x \in [-4, 3]</math></p>	1
28.	<p>Assertion (A): The minimum value of <math>4^x + 4^{1-x}</math> is 4 where <math>x \in \mathbb{R}</math>  Reason (R): A.M <math>\geq</math> G. M  (1) Both A and R are true and R is the correct explanation of A.  (2) Both A and R are true but R is not the correct explanation of A.  (3) A is true but R is false.  (4) A is false but R is true.  Which one is correct</p>	1

	1      (b) 2      (c) 3      (d) 4	
29.	<p>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 <math>T = 30 + 25(x - 3)</math>, <math>3 \leq x \leq 15</math>. At what depth will the temperature be between 155°C and 205°C?</p> <p>(a) <math>8 &lt; x &lt; 10</math>      (b) <math>8 \leq x \leq 10</math>  (c) <math>8 &lt; x \leq 10</math>      (d) <math>8 \leq x &lt; 10</math></p>	1
30.	<p>Assertion (A): The minimum value of <math>2^{\sin^2 x} + 2^{\cos^2 x}</math> is <math>\sqrt{2}</math> where <math>x \in R</math>  Reason (R): <math>A.M \geq G.M</math>  (1) Both A and R are true and R is the correct explanation of A.  (2) Both A and R are true but R is not the correct explanation of A.  (3) A is true but R is false.  (4) A is false but R is true.  Which one is correct  1      (b) 2      (c) 3      (d) 4</p>	1
31.	 <p>A business man has bought 100 mobiles by 9000 each and want to sell every one by 11000 each. At least how many mobiles must he sell to realize some profit?  (a) 80(b) 81(c) 82(d) 83</p>	1
32.	<p>Sunil is well known about Celsius but not about Fahrenheit. He has bought a thermometer which shown temperature in Fahrenheit.</p>  <p>One day he has checked twice his body temperature by this thermometer and seen 212°F</p>	1

	and 215.6°F. Find the range of his body temperature in Celsius? Where $\frac{C}{5} = \frac{F-32}{9}$ (a) $95 \leq C \leq 98$ (b) $100 \leq C \leq 102$ (c) $97 \leq C \leq 110$ (d) $100 \leq C \leq 104$	
33.	If $\frac{1}{a} < \frac{1}{b}$ then which of the following is correct? Where $a, b \in \mathbf{R} - \{0\}$ (a) $a < b$ (b) $b < a$ (c) $a = b$ (d) none of these	1
34.	Amal, Kamal and Bimal go to the school by walking from hostel where they are staying.  <p>Speed of Kamal is twice of Amal and speed of Bimal is seven less than thrice of Amal but not more than to Kamal. Find the maximum speed of Bimal. (a) 14 unit (b) 7 unit (c) 10 unit (d) <math>7/5</math> unit</p>	1
35.	Solve $\frac{1}{2-x} \leq -0.2$ , $x \neq 2$ , when $x$ is whole number. (a) $\{3, 4, 5, 6, 7\}$ (b) $\{2, 3, 4, 5, 6, 7\}$ (c) $\{7, 8, 9, 10, \dots\}$ (d) none of these	1
36.	A shopkeeper has 40 articles. By mistake he has sold 5 articles for 15% loss.  <p>Find the minimum profit percentage for the remaining articles has to be sold to make profit at least 20% . (a) 18% (b) 5% (c) 35% (d) 25 %</p>	1



37.	<p>A student randomly takes some number and add with its reciprocal. In each case he gets more than two. The student thought it is always true for any nonzero real number.</p>  <p>Is he correct? If not, find the range of real numbers where it is correct.</p> <p>( a ) <math>(0, \infty)</math>  ( b ) <math>(0, 1)</math>  ( c ) <math>(0, 1) \cup (1, \infty)</math>  ( d ) none of these</p>	1
38.	<p>A man has gone outside without mobile and wanted to give some important information to his family, that's why he has gone to a public telephone booth.</p>  <p>At that public telephone booth for first minute have to pay Rs 5 and after each minute Rs3. If he has Rs30 at that time, then maximum how many minutes he can talk?</p> <p>(a) 8 mins ( b ) 9 mins ( c ) 10 mins ( d ) 6 mins</p>	1
39.	<p>If <math>\frac{1}{x} &lt; 0.5</math> then find solution set of x, where x is a real number.</p> <p>( a ) <math>(2, \infty)</math> ( b ) <math>(-\infty, 0) \cup (2, \infty)</math> ( c ) <math>(-\infty, \frac{1}{2})</math> ( d ) <math>(0, 0.5)</math></p>	1
40.	<p>A club wants to do swimming competition among 20 members. So for this, collect 100 rupees from each for price money. By a meeting they have decided price will be given to first three positions and not exceed by total money collected.</p>	1



Price money for second position is twice third position and for first position is Rs150 less three times of third position. Find the price money for third position.

(a) Rs 300 (b) Rs 413 (c) Rs 358 (d) Rs 314

41.	$2 + 3x \leq 5 + 3x$ is a (i) Equality (ii) Equation (iii) Inequality (iv) Inequation	1
42.	The interval form of $x \leq -4$ is (a) $(-\infty, -4)$ (b) $(-\infty, -4]$ (c) $(-4, \infty]$ (d) $x \in [-4, \infty)$	1
43.	If $a > b$ and $b > c$ then $a > c$ Which property is it i) commutative ii) Identity iii) Associative iv) Distributive	1
44.	<p><b>In the following questions, a statement of Assertion(A)is followed by a statement of Reason (R). Choose the correct answer out of the following choices.</b></p> <p><b>(a) Both (A) and (R) are true and (R) is the correct explanation of (A).</b></p> <p><b>(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).</b></p> <p><b>(c) (A) is true but (R) is false. (d)(A) is false but(R) is true.</b></p> <p>. Assertion (A): The solution set of the inequality <math>x-3 &lt; 2, x \in \mathbb{N}</math> is <math>\{1,2,3,4,5,6,7,8\}</math>.            Reason (R) :Solution set of a inequality in x is set of values of x satisfying the inequality . Answer            .1.A 2.B. 3. A 4. B 5. d</p>	1
45.		1

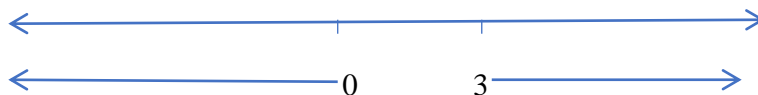




A recharger manufacturing company produces rechargers and its cost function for a week is  $C(x) = 110(4270 + 23x)$  and its revenue function is  $R(x) = 3x$ , where  $x$  is the number of rechargers produced and sold per week. Number of rechargers must be sold for the company to realize a profit is

- A.  $x \geq 618$
- B.  $x > 610$
- C.  $x > 480$
- D. None of These

46.



Shaded part of a line is in given figure can also be described as

- A.  $(-\infty, 0) \cup (3, \infty)$
- B.  $(-\infty, 0] \cup [3, \infty)$
- C.  $(0, 3)$
- D.  $[0, 3]$

47.

If  $ab < 0$  then find the relation

i)  $a < 0, b < 0$

ii)  $a > 0, b > 0$

iii)  $a = 0, b > 0$

iv)  $a > 0, b < 0$

48.

Find the solution set of  $x + \sqrt{-1} < 0$

49.

**In the following questions ,a statement of Assertion(A) is followed by a statement of Reason(R). Choose the correct answer out of the following choices.**

(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(c) (A) is true but(R) is false.

(d) (A) is false but(R) is true.

**Assertion(A) : For  $x \in \mathbb{R}$ ,  $x < -3$  then  $-5x > 15$**

**Reason (R): when both sides are multiplied (or divided) by the same negative number then**

	<b>the sign of inequality reverse.</b>	
50.	<b>If <math>x + 5 &gt; 4x - 10</math>, then find the range of <math>x</math></b>	<b>1</b>
51.	<p>The length of a rectangle is three times the breadth. If the minimum perimeter of the rectangle is 160 cm, then</p> <p>(a) breadth <math>&gt; 20</math> cm   (b) length <math>&lt; 20</math> cm</p> <p>(c) breadth <math>\geq 20</math> cm   (d) length <math>\leq 20</math> cm</p>	<b>1</b>
52.	<p>If <math>-3x + 17 &lt; -13</math>, then</p> <p>(a) <math>x \in (10, \infty)</math>                      (b) <math>x \in [10, \infty)</math></p> <p>(c) <math>x \in (-\infty, 10]</math>                      (d) <math>x \in [-10, 10)</math></p>	<b>1</b>
53.	<p>Given that <math>x, y</math> and <math>b</math> are real numbers and <math>x &lt; y, b &lt; 0</math>, then</p> <p>a) <math>x/b &lt; y/b</math>                              (b) <math>x/b \leq y/b</math></p> <p>(c) <math>x/b &gt; y/b</math>                              (d) <math>x/b \geq y/b</math></p>	<b>1</b>
54.	<p>If <math> x - 1  &gt; 5</math>, then</p> <p>(a) <math>x \in (-4, 6)</math>                              (b) <math>x \in [-4, 6]</math></p> <p>(c) <math>x \in (-\infty, -4) \cup (6, \infty)</math>                      (d) <math>x \in [-\infty, -4) \cup [6, \infty)</math></p>	<b>1</b>
55.	<p>If <math> x - 7 /(x - 7) \geq 0</math>, then</p> <p>(a) <math>x \in [7, \infty)</math>                              (b) <math>x \in (7, \infty)</math></p> <p>(c) <math>x \in (-\infty, 7)</math>                              (d) <math>x \in (-\infty, 7]</math></p>	<b>1</b>
56.	<p>If <math>4x + 3 &lt; 6x + 7</math>, then <math>x</math> belongs</p> <p>(a) <math>(2, \infty)</math>                              (b) <math>(-2, \infty)</math></p> <p>(c) <math>(-\infty, 2)</math>                              (d) <math>(-4, \infty)</math></p>	<b>1</b>
57.	<p>Solving <math>-8 \leq 5x - 3 &lt; 7</math>, we get</p> <p>(a) <math>-1/2 \leq x \leq 2</math>                      (b) <math>1 \leq x &lt; 2</math></p> <p>(c) <math>-1 \leq x &lt; 2</math>                              (d) <math>-1 &lt; x \leq 2</math></p>	<b>1</b>
58.	<p><math>7 &gt; 5</math> is _____</p> <p>a) linear inequality</p> <p>b) quadratic inequality</p>	<b>1</b>

	c) numerical inequality d) literal inequality	
59.	$x > 5$ is _____ a) double inequality b) quadratic inequality c) numerical inequality d) literal inequality	1
60.	$ax^2 + bx + c > 0$ is _____ a) double inequality b) quadratic inequality c) numerical inequality d) linear inequality	1
61.	If $-2 < 2x - 1 < 2$ then the value of $x$ lies in the interval a) $(\frac{1}{2}, \frac{3}{2})$ b) $(-\frac{1}{2}, \frac{3}{2})$ c) $(\frac{3}{2}, \frac{1}{2})$ d) $(\frac{3}{2}, -\frac{1}{2})$	1
62.	If $x^2 < -4$ then the value of $x$ is a) $(-2, 2)$ b) $(2, \infty)$ c) $(-2, \infty)$ d) No solution	1
63.	If $ x  < -5$ then the value of $x$ lies in the interval a) $(-\infty, -5)$ b) $(\infty, 5)$	1

	c) $(-5, \infty)$ d) No solution e)	
64.	The solution of the $15 < \frac{3(x-2)}{5} < 0$ is a) $27 < x < 2$ b) $27 < x < -2$ c) $-27 < x < 2$ d) $-27 < x < -2$	1
65.	If $\frac{x+3}{x-2} > \frac{1}{2}$ then $x$ lies in the interval a) $(-8, \infty)$ b) $(8, \infty)$ c) $(\infty, -8)$ d) $(\infty, 8)$	1
66.	The solution of the inequality $3(2 - x) \geq 2(1 - x)$ for real $x$ is a) $x < 4$ b) $x > 4$ c) $x \leq 4$ d) $x \geq 4$	1
67.	Find the solution for the pair of solution $x > 1$ and $x > -1$ is a) No solution b) $-1 < x < 1$ c) $x < -1$ d) $x > 1$	1
68.	If $4x + 3 < 6x + 7$ then $x \in$ a) $(2, \infty)$ b) $(-2, \infty)$ c) $(-\infty, 2)$ d) $(-\infty, \infty)$	1
69.	Solution of $\frac{2x-3}{3x-5} \geq 3$ is a) $(1, \frac{12}{7})$ b) $(\frac{5}{3}, \frac{12}{7})$ c) $(-\infty, \frac{5}{3})$ d) $(\frac{2}{7}, \infty)$	1
70.	If $-3x + 17 < -13$ then $x \in$ a) $(10, \infty)$ b) $[10, \infty)$ c) $(-\infty, 10)$ d) $[-10, 10)$	1

**ANSWERS:**

Q. NO	ANSWER	MARKS
1.	(c) $x + x + 6 > 100 \Rightarrow 2x > 94 \Rightarrow x > 47$ $\Rightarrow$ minimum value of x is 48.	1
2.	(a) $2x + 3x \leq 500 \Rightarrow x \leq 100 \Rightarrow 2x \leq 200$	1
3.	(a)	1
4.	(a)	1

5.	(b)	1
6.	(c)	1
7.	(a)	1
8.	(a)	1
9.	(b)	1
10.	(c)	1
11.	C. $ x  \leq 1$	1
12.	a. $x > -3$	1
13.	d. $x \geq 5$	1
14.	d. $0 \leq x \leq 40$	1
15.	B. NULL SET	1
16.	b. $-x > -5$	1
17.	C. $x \leq 2 ; x \in \mathbb{R}$	1
18.	B. 2	1
19.	B. $1 < X < 2$	1
20.	a. $\operatorname{cosec} \theta$	1
21.	(d) $y < 2$	1
22.	(d) $1500x + 300y \leq 30000; x + y \leq 60, x \geq 0, y \geq 0$	1
23.	(c) $x \geq -11$	1
24.	(c) breadth $x \geq 20$ cm	1
25.	(d) $(-\infty, 2)$	1
26.	(d) $(-\infty, 2) \cup (3, \infty)$	1
27.	(A)	1
28.	1	1
29.	(a) $8 < x < 10$	1
30.	(d) 4	1
31.	(c)	1
32.	(b)	1
33.	(d)	1
34.	(a)	1
35.	(a)	1
36.	(d)	1
37.	(c)	1
38.	(b)	1
39.	(b)	1
40.	(c)	1
41.	iii	1
42.	b	1
43.	iii	1
44.	d	1
45.	b	1



46.	a	1
47.	iv	1
48.	d	1
49.	a	1
50.	$(-\infty, 5)$	1
51.	(c) breadth $x \geq 20$ cm	
52.	(a) $x \in (10, \infty)$	
53.	(a) $x/b < y/b$	
54.	(c) $x \in (-\infty, -4) \cup (6, \infty)$	
55.	(b) $x \in (7, \infty)$	
56.	(b) $(-2, \infty)$	
57.	(c) $-1 \leq x < 2$	
58.	(c) numerical inequality	
59.	(d) literal inequality	
60.	(b) quadratic inequality	
61.	b	1
62.	d	1
63.	d	1
64.	a	1
65.	a	1
66.	c	1
67.	d	1
68.	b	1
69.	b	1
70.	a	1