EXERCISE 6.1 - Question No. 1

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

EXERCISE 6.1 - Question No. 2

Solve $-12x$ and $> ; 30$, when (i) x is a natural number. (ii) x is an integer

EXERCISE 6.1 - Question No. 3

Solve $5x - 3$ and $\quad <$; 7 , when (i) x is a natural number. (ii) x is an integer

EXERCISE 6.1 - Question No. 4

Solve $3x + 8 > 2$, when (i) x is a natural number. (ii) x is an integer

EXERCISE 6.1 - Question No. 5

Solve the inequalities for real x : $4x + 3 < 6x + 7$

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EXERCISE 6.1 - Question No. 6

Solve the inequalities for real x : $3x7 > 5x1$

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EXERCISE 6.1 - Question No. 7

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

EXERCISE 6.1 - Question No. 8

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

EXERCISE 6.1 - Question No. 9

Solve the inequalities for real x : $x + \frac{x}{2} + \frac{x}{3} < 11$

EXERCISE 6.1 - Question No. 10

Solve the inequalities for real x : $\frac{x}{3} > \frac{x}{2} + 1$

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EXERCISE 6.1 - Question No. 11

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

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EXERCISE 6.1 - Question No. 12

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

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EXERCISE 6.1 - Question No. 13

Solve the inequalities for real x : $2(2x+3)10$ and $<;6(x-2)$

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EXERCISE 6.1 - Question No. 14

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

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EXERCISE 6.1 - Question No. 15

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

EXERCISE 6.1 - Question No. 16

Solve the inequalities for real x :

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

EXERCISE 6.1 - Question No. 17

Solve the inequalities and show the graph of the solution in each case on number line : $3x - 2 < 2x + 1$

EXERCISE 6.1 - Question No. 18

Solve the inequalities and show the graph of the solution in each case on number line : $5x - 3 \geq 3x - 5$

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EXERCISE 6.1 - Question No. 19

Solve the inequalities and show the graph of the solution in each case on number line : $3(1x) < 2(x + 4)$

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EXERCISE 6.1 - Question No. 20

Solve the inequalities and show the graph of the solution in each case on number line : $\frac{x}{2} < \frac{(5x-2)}{3} - \frac{(7x-3)}{5}$

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EXERCISE 6.1 - Question No. 21

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

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EXERCISE 6.1 - Question No. 22

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 m fifth examination to get grade A in the course.

EXERCISE 6.1 - Question No. 23

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

EXERCISE 6.1 - Question No. 24

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

EXERCISE 6.1 - Question No. 25

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.

EXERCISE 6.1 - Question No. 26

A man wants to cut three lengths from a single piece of board of length 91cm The second length is to be 3 cm 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?

EXERCISE 6.2 - Question No. 1

Solve the inequalities graphically in twodimensional plane:

$x + y < 5$

EXERCISE 6.2 - Question No. 2

Solve the inequalities graphically in twodimensional plane:

$2x + y \geq 6$

EXERCISE 6.2 - Question No. 3

Solve the inequalities graphically in twodimensional plane:

$3x + 4y \leq 12$

EXERCISE 6.2 - Question No. 4

Solve the inequalities graphically in twodimensional plane:

$y + 8 \geq 2x$

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EXERCISE 6.2 - Question No. 5

Solve the inequalities graphically in twodimensional plane:

$x - y \leq 2$

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EXERCISE 6.2 - Question No. 6

Solve the inequalities graphically in twodimensional plane:

$2x - 3y > 6$

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EXERCISE 6.2 - Question No. 7

Solve the inequalities graphically in twodimensional plane:

$-3x + 2y \geq -6$

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EXERCISE 6.2 - Question No. 8

Solve the inequalities graphically in twodimensional plane:

$3y - 5x < 30$

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EXERCISE 6.2 - Question No. 9

Solve the inequalities graphically in twodimensional plane: $y < 2$

EXERCISE 6.2 - Question No. 10

Solve the inequalities graphically in twodimensional plane:

$x \text{ and } > ; -3$

EXERCISE 6.3 - Question No. 1

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

EXERCISE 6.3 - Question No. 2

Solve the system of inequalities graphically :

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

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EXERCISE 6.3 - Question No. 3

Solve the system of inequalities graphically :

$2x + y \geq 6, 3x + 4y \leq 12$

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EXERCISE 6.3 - Question No. 4

Solve the system of inequalities graphically :

$x + y > 4, 2x - y > 0$

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EXERCISE 6.3 - Question No. 5

Solve the system of inequalities graphically :

$2x - y > 1, x - 2y < -1$

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EXERCISE 6.3 - Question No. 6

Solve the system of inequalities graphically :

$x + y \leq 6, x + y \geq 4$

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EXERCISE 6.3 - Question No. 7

Solve the system of inequalities graphically :

$2x + y \geq 8, x + 2y \geq 10$

EXERCISE 6.3 - Question No. 8

Solve the system of inequalities graphically :

$x + y \leq 9, y > x, x \geq 0$

EXERCISE 6.3 - Question No. 9

Solve the system of inequalities graphically :

$5x + 4y \leq 20, x \geq 1, y \geq 2$

EXERCISE 6.3 - Question No. 10

Solve the system of inequalities graphically :

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

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EXERCISE 6.3 - Question No. 11

Solve the system of inequalities graphically :

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

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EXERCISE 6.3 - Question No. 12

Solve the system of inequalities graphically :

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

EXERCISE 6.3 - Question No. 13

Solve the system of inequalities graphically :

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

EXERCISE 6.3 - Question No. 14

Solve the system of inequalities graphically :

$3x + 2y \leq 150, x + 4y \leq 80, x \leq 15, y \geq 0$.

EXERCISE 6.3 - Question No. 15

Solve the system of inequalities graphically :

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

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MISCELLANEOUS EXERCISE - Question No. 1

Solve the inequalities : $2 \leq 3x - 4 \leq 5.$

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MISCELLANEOUS EXERCISE - Question No. 2

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

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MISCELLANEOUS EXERCISE - Question No. 3

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

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MISCELLANEOUS EXERCISE - Question No. 4

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

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MISCELLANEOUS EXERCISE - Question No. 5

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

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MISCELLANEOUS EXERCISE - Question No. 6

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

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MISCELLANEOUS EXERCISE - Question No. 7

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

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MISCELLANEOUS EXERCISE - Question No. 8

Solve the inequalities and represent the solution graphically on number line. $2(x-1) < (x+5), 3(x+2) > 2-x$. lt /x+5,3(x+2) gt

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MISCELLANEOUS EXERCISE - Question No. 9

Solve the inequalities and represent the solution graphically on number line. $3x-7 > 2(x-6), 6-x > 11-2x$.

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MISCELLANEOUS EXERCISE - Question No. 10

Solve the inequalities and represent the solution graphically on number line. $5(2x-7)-3(2x+3) \leq 0, 2x+19 \leq 6x+4y$.

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MISCELLANEOUS EXERCISE - Question No. 11

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

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MISCELLANEOUS EXERCISE - Question No. 12

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?

MISCELLANEOUS EXERCISE - Question No. 13

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?

MISCELLANEOUS EXERCISE - Question No. 14

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 $80 \leq IQ \leq 140$ for a group of 12 years old children, find the range of their mental age.

SOLVED EXAMPLES - Question No. 1

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

SOLVED EXAMPLES - Question No. 2

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

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SOLVED EXAMPLES - Question No. 3

Solve $4x + 3 < 6x + 7$.

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SOLVED EXAMPLES - Question No. 4

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

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SOLVED EXAMPLES - Question No. 5

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

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SOLVED EXAMPLES - Question No. 6

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

SOLVED EXAMPLES - Question No. 7

The marks obtained by a student of Class XI in first and second terminal examination are 62 and 48, respectively. Find the number of minimum marks he should get in the annual examination to have an average of at least 60 marks.

SOLVED EXAMPLES - Question No. 8

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

SOLVED EXAMPLES - Question No. 9

Solve $3x + 2y > 6$ graphically.

SOLVED EXAMPLES - Question No. 10

Solve $3x - 6 \geq 0$ graphically in two dimensional plane.

SOLVED EXAMPLES - Question No. 11

Solve $y < 2$ graphically.

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SOLVED EXAMPLES - Question No. 12

Solve the following system of linear inequalities graphically.

$x + y \geq 5 \ldots$ (i) $x - y \leq 3 \ldots$ (ii)

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SOLVED EXAMPLES - Question No. 13

Solve the following system of inequalities graphically

$5x + 4y \leq 40 \ldots$ (i) $x \geq 2 \ldots$ (ii) $y \geq 3 \ldots$ (iii)

SOLVED EXAMPLES - Question No. 14

Solve the following system of inequalities $8x + 3y \leq 100 \ldots$ (i)

$x \geq 0 \ldots$ (ii) $y \geq 0 \ldots$ (iii)

SOLVED EXAMPLES - Question No. 15

Solve the following system of inequalities graphically $x + 2y \leq 8$

$\ldots$ (i) $2x + y \leq 8 \ldots$ (ii) $x \geq 0 \ldots$ (iii) $y \geq 0 \ldots$ (iv)

SOLVED EXAMPLES - Question No. 16

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

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SOLVED EXAMPLES - Question No. 17

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

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SOLVED EXAMPLES - Question No. 18

Solve the system of inequalities : $3x - 7$ and $< ; 5 + x,$

$11 - 5x \leq 1$ and represent the solutions on the number line.

SOLVED EXAMPLES - Question No. 19

In an experiment, a solution of hydrochloric acid is to be kept between 30*o* and 35*o* 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 deg

SOLVED EXAMPLES - Question No. 20

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%?