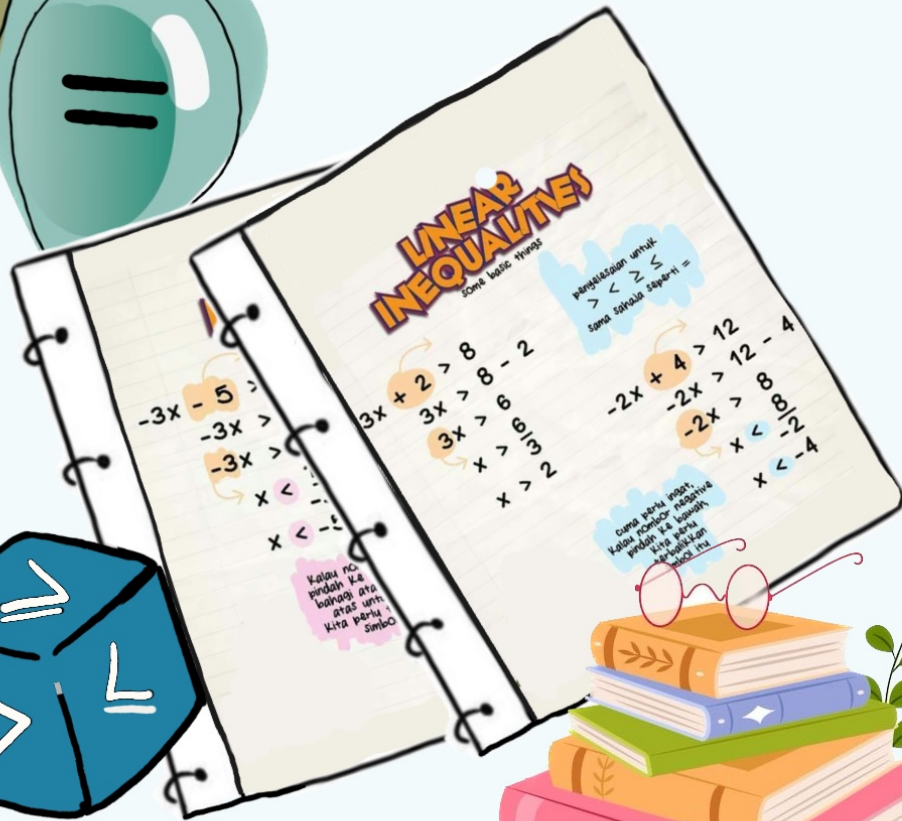
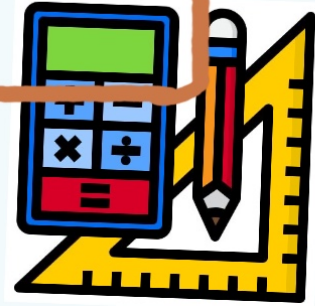


# LINEAR INEQUALITY



## LINEAR INEQUALITIES

Some basic things

penyebutan untuk  
> < ≥ ≤  
sama. Sama-sama seperti =

$$\begin{aligned} -3x - 5 &> \\ -3x &> \\ -3x &> \\ x &< \\ x &< \end{aligned}$$

$$\begin{aligned} 3x + 2 &> 8 - 2 \\ 3x &> 8 - 2 \\ 3x &> 6 \text{ dibagi 3} \\ x &> 2 \end{aligned}$$

$$\begin{aligned} -2x + 4 &> 12 - 4 \\ -2x &> 12 - 4 \\ -2x &> 8 \text{ dibagi } -2 \\ x &< -4 \\ x &< -4 \end{aligned}$$

Kalau no. pindah ke bawah atau atas, kita perlu simbol

dulu perlu positif, kalau pindah negatif, pindah ke bawah, kita perlu simbol yang berlawanan



### Question 1

Solve the inequality.

$$3n - 11 > 5n - 18$$

[2]

$$-2n > -7$$

$$n < \frac{7}{2}$$

### Question 2

(a) Solve the inequality.

$$x + 13 \geq 3x + 7$$

[2]

$$-2x \geq -6$$

$$x \leq 3$$

(b) List the positive integers that satisfy the inequality in part(a).

[1]

1, 2, 3

### Question 3

Find the positive integers that satisfy the inequality  $t + 2 > 3t - 6$ .

[3]

$$-2t > -8$$

$$t < 4$$

$$\therefore 1, 2, 3$$

### Question 4

Solve the inequality.

$$n + 7 < 5n - 8$$

[2]

$$-4n < -15$$

$$n > \frac{15}{4}$$

$$n > 3 \frac{3}{4}$$

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### Question 5

Solve the inequality.

$$6n + 3 > 8n$$

[2]

$$-2n > -3$$

$$n < \frac{3}{2}$$

$$n < 1\frac{1}{2}$$

### Question 6

Solve the inequality for positive integer values of  $x$ .

$$\frac{21+x}{5} > x+1$$

[4]

$$21+x > 5x+5$$

$$-4x > -16$$

$$x < 4$$

### Question 7

Solve the inequality.

$$5t + 23 < 17 - 2t$$

[2]

$$7t < -6$$

$$t < -\frac{6}{7}$$

### Question 8

Solve the inequality.

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

[4]

$$\frac{3x + 2x - 4}{6} < 5$$

$$5x - 4 < 30$$

$$5x < 34$$

$$x < 6\frac{4}{5} \text{ The Maths Society}$$

### Question 9

Solve the inequality.

$$3x - 1 \leq 11x + 2$$

[2]

$$-3 \leq 8x$$

$$x \geq -\frac{3}{8}$$

### Question 1

Solve the inequality.

$$\frac{2x-3}{5} - \frac{x}{3} \leq 2$$

[3]

$$\frac{6x - 9 - 5x}{15} \leq 2$$

$$x - 9 \leq 30$$

$$x \leq 39$$

### Question 2

$x$  is a positive integer and  $15x - 43 < 5x + 2$ .

Work out the possible values of  $x$ .

[3]

$$10x < 45$$

$$x < 4.5$$

$$x = 1, 2, 3, 4$$

### Question 3

Solve the inequality.

$$3y + 7 \leq 2 - y \quad [2]$$

$$\begin{aligned} 4y &\leq 5 \\ y &\leq \frac{5}{4} \\ y &\leq 1\frac{1}{4} \end{aligned}$$

### Question 4

Solve the inequality.

$$2x + 5 < \frac{x-1}{4} \quad [3]$$

$$8x - 20 < x - 1$$

$$7x < 19$$

$$x < \frac{19}{7}$$

$$x < 2\frac{5}{7}$$

### Question 5

Solve the inequality

$$6(2 - 3x) - 4(1 - 2x) \leq 0. \quad [3]$$

$$12 - 18x - 4 + 8x \leq 0$$

$$-10x + 8 \leq 0$$

$$-10x \leq -8$$

$$x \geq \frac{4}{5}$$

### Question 6

Solve the inequality

$$\frac{2-5x}{7} < \frac{2}{5} \quad [3]$$

$$10 - 25x < 14$$

$$-25x < 4$$

$$x > \frac{4}{25}$$

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### Question 7

Solve the inequality

$$4 - 5x < 2(x + 4).$$

[3]

$$4 - 5x < 2x + 8$$

$$-7x < 4$$

$$x > -\frac{4}{7}$$

### Question 8

Solve the inequality

$$5 - 3x < 17.$$

[2]

$$-3x < 12$$

$$x > -4$$

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### Question 9

(a) Solve the inequality  $5 - \frac{2x}{3} > \frac{1}{2} + \frac{x}{4}$

[3]

$$\frac{15 - 2x}{3} > \frac{2 + x}{4}$$

$$60 - 8x > 6 + 3x$$

$$54 > 11x \quad \Bigg| \quad x < 4 \frac{10}{11}$$

$$x < \frac{54}{11}$$

(b) List the positive integers which satisfy the inequality

[1]

$$5 - \frac{2x}{3} > \frac{1}{2} + \frac{x}{4}$$

$$x = 1, 2, 3, 4$$

### Question 1

Find the integers which satisfy the inequality.

$$\begin{aligned} & -5 < 2n - 1 \leq 5 && [3] \\ & -5 < 2n - 1 && 2n - 1 \leq 5 \\ & -4 < 2n && 2n \leq 6 \\ & -2 < n && n \leq 3 \\ & && -2 < n \leq 3 \end{aligned}$$

### Question 2

Solve  $6x + 3 < x < 3x + 9$  for integer values of  $x$ .

$$\begin{aligned} & 6x + 3 < x && x < 3x + 9 && [4] \\ & 5x < -3 && -2x < 9 \\ & x < -\frac{3}{5} = -0.6 && x < -4.5 \\ & && -4.5 < x < -0.6 \\ & && x = -4, -3, -2, -1 \end{aligned}$$

### Question 3

(a) Solve  $3n + 23 < n + 41$ . [2]

$$\begin{aligned} & 2n < 18 && \begin{array}{r} 3n + 23 \\ -23 \\ \hline 18 \end{array} \\ & n < 7 \end{aligned}$$

(b) Factorise completely  $ab + bc + ad + cd$ . [2]

$$\begin{aligned} & b(a+c) + d(a+c) \\ & (a+c)(b+d) \end{aligned}$$

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#### Question 4

List all the prime numbers which satisfy this inequality.

$$16 < 2x - 5 < 48$$

[3]

$$16 < 2x - 5$$

$$2x - 5 < 48$$

$$21 < 2x$$

$$2x < 53$$

$$10.5 < x$$

$$x < 26.5$$

$$10.5 < x < 26.5$$

$$x = 11, 13, 17, 19, 23$$

#### Question 5

Solve the inequality

$$\frac{2x-5}{8} > \frac{x+4}{3}$$

[3]

$$6x - 15 > 8x + 32$$

$$-2x > 47$$

$$x < -23.5$$

#### Question 6

Solve the inequality

$$3 < 2x - 5 < 7.$$

[2]

$$8 < 2x$$

$$2x < 12$$

$$4 < x$$

$$x < 6$$

$$4 < x < 6$$