

2.6 Linear Inequality

Need To Know



- Idea of inequality
- Graphing inequalities
- Addition property of inequality
- Multiplication property of inequality
- Solving inequalities

Equations vs. Inequalities

Equation =

$$x = 3$$

Solutions:

Graph:

Inequality $<, \leq, >, \geq$

$$x < 3$$

Solutions:

Graph:



Graphing Inequalities

Graph each:

$x > -2$ \longleftrightarrow

$a \geq -1$ \longleftrightarrow

$-4 \leq z < 1$ \longleftrightarrow



Solving Inequalities

Solving inequalities is the same as solving equations except for one special situation.

Addition Property of Equality

If $A < B$,
Then _____

In words: Adding or subtracting the same thing to **both** sides of the inequality will keep the same solution set.



Solving Inequalities

Solve: $3x - 7 \geq 2x + 3$ and graph solution.




Idea of Multiplying Inequalities

Consider multiplying both sides by a **positive**:

1) $2 < 6$

2) $-2 < 6$

3) $-2 < -6$

Consider multiplying both sides by a **negative**:

1) $2 < 6$

2) $-2 < 6$

3) $-2 < -6$

Solving Inequalities

Multiplication Property of Equality

- 1) If $A < B$,
Then $AC < BC$ if C is _____.

Multiplying or dividing a **positive** to **both** sides of the inequality will keep the same solution set.

- 2) If $A < B$,
Then $AC > BC$ if C is _____.

Multiplying or dividing a **negative** to **both** sides of the inequality requires _____ to keep the same solution set.

Solving Inequalities

Solve and graph:

$$\frac{x}{4} \leq -2$$



Solve and graph:

$$-3a > 12$$





Solving Inequalities

Solve and graph:

$$-\frac{3}{4}y > 6$$



Solve and graph:

$$3x - 4 > 17$$



Solving Inequalities

Solve and graph:

$$2(3m - 1) + 5 \geq 8m - 7$$





Solving Inequalities

Solve and graph:

$$\frac{1}{3}y - \frac{1}{2} \leq \frac{5}{6} + \frac{1}{2}$$



end