

2.2 Solving Inequalities Using Addition & Subtraction with work

2.2 Solving Inequalities by Addition and Subtraction

Addition Property of Equality POE
 If $a = b$ then $a + c = b + c$
 If $a = b$ then $a - c = b - c$

Addition Property of Inequalities
 If $a > b$ then $a + c > b + c$
 If $a < b$ then $a + c < b + c$

Ex. 1: Solve the inequality $x - 5 < 9$
 $\begin{array}{r} x - 5 < 9 \\ +5 \quad +5 \\ \hline x < 14 \end{array}$
 LOL
 Set builder notation:

$$\{x \mid x < 14\}$$

Check the solution:

$$\begin{array}{l} 0 - 5 < 9 \\ 10 - 5 < 9 \\ 10 - 5 < 9 \end{array} \quad \begin{array}{l} 0 - 5 < 9 \\ -5 < 9 \\ 5 < 9 \end{array} \quad \checkmark$$

Graph the solution



Dec 4-9:05 AM

★ Subtraction Property of Inequalities

If $a > b$ then $a - c > b - c$
 If $a < b$ then $a - c < b - c$

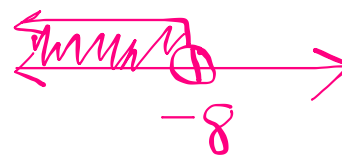
Ex. 2: Solve: $x + 3 > -2$
 $\begin{array}{r} x + 3 > -2 \\ -3 \quad -3 \\ \hline x > -5 \end{array}$



LOL

Write all inequality solutions with the variable on the left!

Ex. 3: Solve: $-3 > x - 5$
 $\begin{array}{r} -3 > x - 5 \\ -5 \quad -5 \\ \hline -8 > x \\ x < -8 \end{array}$



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2.2 Solving Inequalities Using Addition & Subtraction with work

Inequality Verbal Expressions:

Examples: A number decreased by 8 is at most 14.

$$n - 8 \leq 14$$

A number increased by 7 is no less than 2.

$$x + 7 \geq 2$$

graphing: open circle for $<$ and $>$ ○
closed circle for \leq and \geq ●

You try: solve, set builder notation, graph

1. $9 \leq b + 4$

$$\begin{array}{r} -4 \\ 9 \leq b + 4 \\ \hline 5 \leq b \end{array}$$

$$b \geq 5$$

$$\{b \mid b \geq 5\}$$

2. $t - 7 > 5$

$$\begin{array}{r} +7 \\ t - 7 > 5 \\ \hline t > 12 \end{array}$$

$$\{t \mid t > 12\}$$

3. $7 + 3 > x - (-4)$

$$\begin{array}{r} -4 \\ 10 > x - (-4) \\ \hline 6 > x \end{array}$$

$$x < 6$$

$$\{x \mid x < 6\}$$

Dec 4-9:23 AM

A circuit overloads at 1800 watts of electricity. You plug a microwave oven that uses 1100 watts of electricity into the circuit.

- Write and solve an inequality that represents how many watts you can add to the circuit without overloading the circuit.
- In addition to the microwave oven, which of the following appliances can you plug into the circuit at the same time without overloading the circuit?

b)

Appliance	Watts
Clock radio	50 ✓
Blender	300 ✓
Hot plate	1200 ✗
Toaster	800 ✗

a)

$$\begin{array}{r} 1100 + x \leq 1800 \\ -1100 \quad -1100 \\ \hline x \leq 700 \end{array}$$

Sep 20-9:51 AM

2.2 Add/Sub Inequalities

HW: p 65

A: 14 - 28 (e), 31, 32, 38 - 46 (e)

B: 1 - 6, 8 - 24 (M4), 22, 31, 32, 34, 39 - 44 w/o calculator

C: 1, 3, 5, 12, 16, 22, 31, 32, 41, 44

Sep 20-9:53 AM