

LESSON 5-1 Solving Inequalities by Addition and Subtraction

I can... perform algebraic operations to solve and verify single step inequalities and graph them on a number line.

(Addition, Subtraction, Multiplication, and Division.)

Jan 10-11:50 AM

Inequality

Less than
less

To the left

$$x < 5$$

○

Greater than
to the right

○

Less than
or equal to

≤

$$x \leq 5$$

●

"at most"

≥

Greater than
or equal to

●


"at least"

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1. Solve $c - 12 > 65$ and graph. Check your solution.

$$\begin{array}{r}
 c - 12 > 65 \\
 +12 \quad +12 \\
 \hline
 c > 77 \quad \checkmark
 \end{array}$$

c is to the right of 77




? $80 - 12 > 65$
 $68 > 65$



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2. Solve $k - 4 < 10$ and graph the solution.

3. $3p - 6 \geq 4p$

$$-6 \geq p$$


-6 is to the right of p.

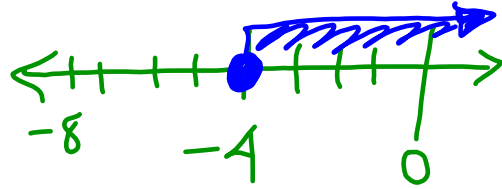
4. $12n - 4 \leq 13n$

$$\begin{array}{l}
 -4 \leq n \\
 n \geq -4
 \end{array}$$

$$p \leq -6$$

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$$\begin{array}{r}
 12n - 4 \leq 13n \\
 -12n \quad \quad \quad -12n \\
 \hline
 -4 \leq n
 \end{array}$$



★ You can flip around if you chg inequality.

$$\checkmark \boxed{n \geq -4}$$

$$\begin{array}{r}
 12(0) - 4 \leq 13(0) \\
 -4 \leq 0
 \end{array}$$

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5. A number decreased by 10 is greater than -5 .

$$x - 10 > -5$$



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Write an equation for the following. Solve and graph on a number line.

6. A number increased by 1 is less than 9.
7. Seven more than a number is less than or equal to -18 .
8. Twenty less than, a number is at least 15.
9. A number plus 2 is at most 1.

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I can... perform algebraic operations to solve and verify single step inequalities and graph them on a number line.
(Addition, Subtraction, Multiplication, Division)

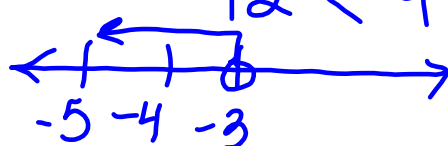
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SOLVING WITH INEQUALITIES RULE

Every time you **MULTIPLY** or **DIVIDE** by a **NEGATIVE** you must **FLIP** your sign (inequality).

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This is wrong:

$$\begin{aligned} \frac{-3x}{-3} &< \frac{9}{-3} \\ x &< -3 \\ -3(-4) &< 9 \\ 12 &< 9 \end{aligned}$$


correct way

$$\begin{aligned} \frac{-3x}{-3} &< \frac{9}{-3} \\ x &> -3 \end{aligned}$$

flip inequality.

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Pull

1. **Solve** $-\frac{1}{3}x > 10.$

$$(+3)(+\frac{1}{3})x > 10(-3)$$

$$x < -30$$

↓ 1st!

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2. **Solve** $12k \geq 60.$

$$12k \geq -60$$

$$-\frac{x}{5} \geq 10$$

$$-12k \geq 60$$

$$\frac{x}{5} \leq 10$$

$$-12k \geq -60$$

$$-x + 5 > 6$$

$$x - 3 < 5$$

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Solve the following and graph on a number line.

3. $-8q < 136$

4. $15p < 60$

5. $-4z > 64$

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5. Mateo is walking at a rate of $\frac{3}{4}$ mile per hour. He knows that it is at least 9 miles to Onyx Lake. How many hours will it take Mateo to get there? Write and solve an inequality to find the length of time.

x : # of hours

$$\frac{4}{3} \cdot \frac{3}{4} x \geq 9 \cdot \frac{4}{3}$$

$$x \geq 12$$

It would take him at least twelve hours.

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6. Four times a number is greater than -48 .

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Write, solve and graph inequalities for the following.

7. One eighth of a number is less than or equal to 3.
8. Negative twelve times a number is no more than 84.
9. Negative one sixth of a number is less than -9 .
10. Eight times a number is at least 16.

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Homework 5.1

Pg. 288
#13-39o

Homework 5.2

Pg. 295
#11-33o