6.4 Solving Linear Equations by Using Addition and Subtraction

- To solve an inequality, we use the same strategy as for solving an equation:

What you do to one side you must do the SAME to the other side.

Equation:

$x + 7 = 15$

One solution: x = 8

Inequality:

$x + 7 < 15$

MANY solutions; any number **less than 8** is a solution.

Solving an Inequality

a) Solve the inequality.
b) Verify the solution.
c) Graph the solution.

1. a) solve $x - 3.5 \geq -10$

$+ 3.5 \quad + 3.5$

$x - 3.5 \geq -10$

$x \geq -6.5$

b) Verify:
Choose numbers greater than -6.5, such as 8 or 20.

LS RS

$x - 3.5 \geq -10$

$8 - 3.5 \geq -10$

$4.5 \geq -10$

$x \geq -6.5$

LS RS

$x - 3.5 \geq -10$

$20 - 3.5 \geq -10$

$16.5 \geq -10$

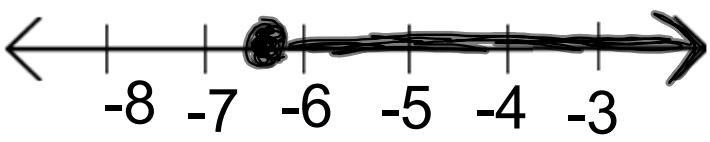
LS RS

$x - 3.5 \geq -10$

$0 - 3.5 \geq -10$

$-3.5 \geq -10$

c) Graph:



Try These!

2. $5 > m + 12$

3. $-2y < -3y + 1$

4. $-1 \geq 4 + h + 3.5$

5. $-4y + 7 < -5y + 1$

Try to move letter so they end up with a positive number infront.

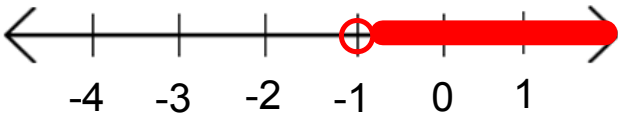
Match each inequality with the graph of its solution:

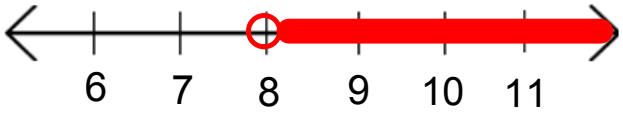
a) $x - 3 > 5$

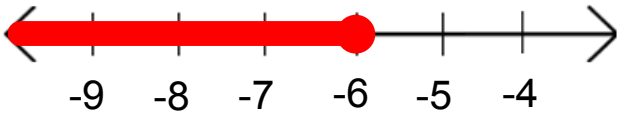
b) $-10 \geq -4 + p$

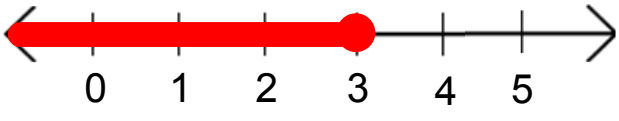
c) $7 < r + 8$

d) $-5 + w \leq -2$









Verifying an INEQUALITY

When verifying an inequality you can only say that it appears that your response is correct it doesn't say for certain that it is correct. So, our verification is just to give us some proof that we are on the right track with our solution.

Example:

$6.2 < x - 4.5$

Verify: pick a solution that makes our statement true

$6.2 + 4.5 < x - 4.5 + 4.5$

$10.7 < x$ or $x > 10.7$

Classwork / Homework:

p. 298

#7
#8
9 a,c,d,f
15

Solving Problems Using Inequalities:

Alison plans to rent a hall for her grad party.

- The Douglastown Rec Centre charges $90 plus $20 an hour.
- The Chatham Head Rec Centre charges $100 plus $19 an hour.

For how many hours must she rent the hall in Douglastown in order for it to be less expensive than the hall in Chatham Head?

Solution:

Let h = number of hours

Douglastown: 90 + 20h Chatham Head: 100 + 19h

$$90 + 20h < 100 + 19h$$