Chapter 3 Inequalities

$<, \leq, >, \geq, \neq, \ldots$

we will mainly use these four inequalities

How do you say this? $w > 9$

w is greater than 9 or 9 is less than w

How do you say this? $-11 \geq T$

-11 is greater than or equal to T or T is less than or equal to -11

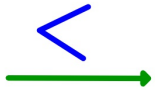
These are the preferred way of saying the inequalities.

Start with the side that has the variable.

How do you say this? <

It depends on the direction you read it!

If you read from left to right you would say



Less Than

If you read from right to left you would say

Greater Than

An inquality always points to the smaller number.

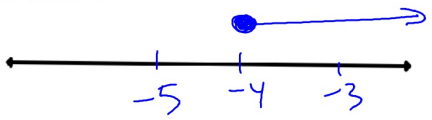
Smaller Number < Bigger Number

Bigger Number > Smaller Number

Graph each inequality on a number line.

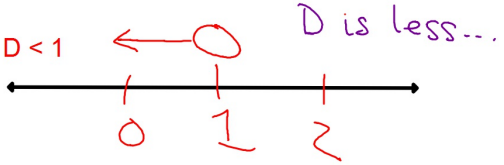
a)
1. $w \geq -4$

w is greater...



b) $D < 1$

D is less...



● or ○

≤ or ≥ means
to use
a SHADED CIRCLE
●

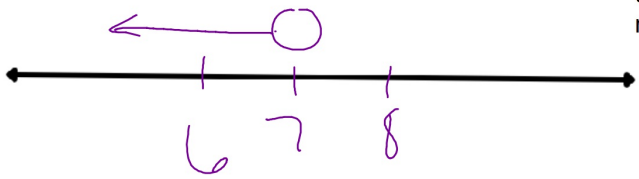
< or > means
to use
an OPEN CIRCLE
○

read the inequality by starting with the variable:

when you say less you move to the left on the number line.

2. $7 > c$

c is less...



Write an inequality to model each statement.

3. There needs to be at least 12 interested students to start an art club.

$S \geq 12$

4. The maximum number of people allowed in the restaurant is 150.

$P \leq 150$

5. Alan can get no more than 3 wrong to get an A.

$W \leq 3$

6. The minimum amount you must have in your bank account so that you won't get charged a fee by the bank is $100.

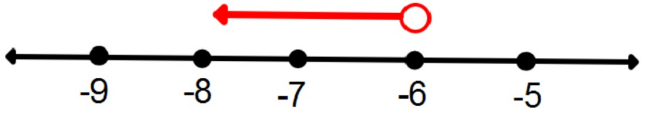
$\$ \geq 100$

7. The truck can tow up to 2500 lbs.

$T \leq 2500$

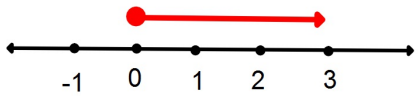
Model each graph with an inequality.

8.



$w < -6$

9



$c \geq 0$

Use this Inequality: $4x - 15 > -3$

Is each of the below a solution to this inequality?

a. 7

Yes

$4(7) - 15 \; 7 - 3$

$28 - 15$

$13 > -3$ True

b. 1

$4(1) - 15$

$4 - 15$

$-11 > -3$ False

NO

c. 3

$4(3) - 15$

$12 - 15$

$-3 > -3$ False

NO

d. -5

$4(-5) - 15$

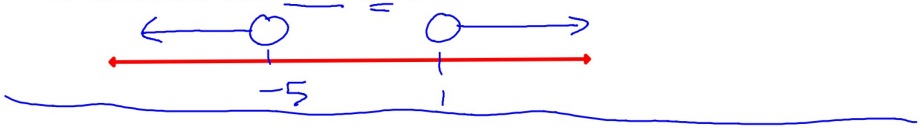
$-20 - 15$

$-35 > -3$ False

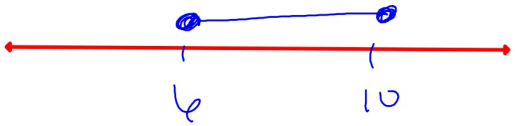
NO

graph on a number line:

all values such that $x < -5$ or $x > 1$



all the values such that $x \geq 6$ and $x \leq 10$



The word AND means that you want the set of numbers that are to the right of 6 AND AT THE SAME TIME to the left of 10.

another way to say this is everything BETWEEN 6 and 10.

You can now finish Hwk #14.

Sec 3-1

Pages 136-138

Problems 9, 10, 20, 22, 23, 31-35, 37, 38, 40, 51, 72

If $45 + 47 = t$, does $t \equiv 45 + 47$? Yes

These are actually the same statement, the two sides are equal to each other.

If $45 + 47 < r$, is $r < 45 + 47$? NO

r is greater r is less

These are not the same statement

Solve and graph the solution:

$4 + 3x - 7 > 15$

$3x - 3 > 15$

$+3 \quad +3$

$\frac{3x}{3} > \frac{18}{3}$

$x > 6$

$x > 6$