Algebra 1 Name KEY ID: 1

6.1-6.3 Practice - Graphing & Solving Inequalities Date _____ Period ____

6.1 NOTES:

INEQUALITIES HAVE INFINITE SOLUTIONS.

→ We use Graph to show solutions

→ OPEN DOT (○) <, >, ≠

→ CLOSE DOT (●) ≤, ≥, = (CLOSED DOTS INCLUDE THE #)

EX] $x \geq 5$ → 5 6 7 ... +∞ The solution are all numbers greater than and including 5

WRITE INEQ'S: Variable, Symbol, #

THEN YOUR SYMBOL AND ARROW GO IN THE SAME DIRECTION

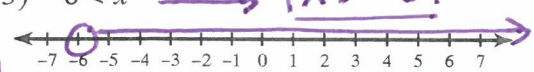
A **Draw a graph for each inequality. When applicable, rewrite the inequailty with the variable first.**

1) $x < 1$ — OPEN — HW: ← ○ 1

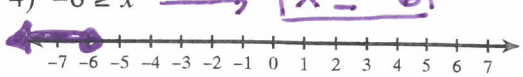
2) $n \geq -1$ — CLOSED DOT — HW: ● -1 →

Rewrite w/ Variable 1ST

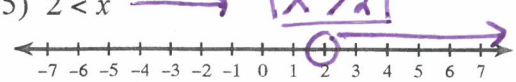
3) $-6 < x$ → $x > -6$



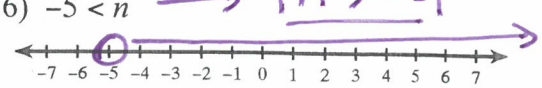
4) $-6 \geq x$ → $x \leq -6$



5) $2 < x$ → $x > 2$

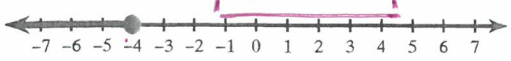


6) $-5 < n$ → $n > -5$

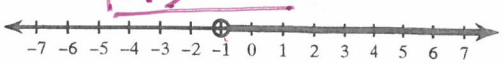


B **Write an inequality for each graph. (use the variable X and write the inequality with the variable first)**

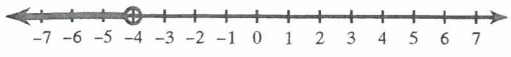
7) $x \leq -4$



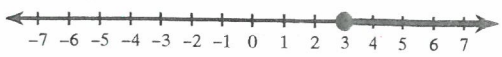
8) $x > -1$



9) $x < -4$



10) $x \geq 3$



Remember: < "less than"

> "greater than"

6.2 Notes: **SOLVING INEQUALITIES**

We solve ineq's just like EQ's with 2 additions:

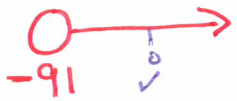
① We switch the symbol when we mult or divide the variable by a negative number

② ALWAYS Graph to show all the solutions

Solve linear inequalities involving two-steps. Clearly show EACH STEP. Circle your answer. Then graph the solution.

11) $\frac{x}{13} > -7$ ·13

$x > -91$ ← SOLUTION



12) $-11n < 55$

$-11 \quad -11$

$n > -5$

Switch the symbol b/c we divide n by -11

Tip: mentally check $x=0$

13) $-6x + 8 \geq -16$

$-8 \quad -8$

$-6x \geq -24$

$\frac{-6}{-6} \quad \frac{-6}{-6}$

$x \leq 4$

14) $-1 \leq \frac{n}{5} + 2$

$-2 \quad -2$

$5(-3) \leq \left(\frac{n}{5}\right)5$ ← DO NOT SWITCH

$-15 \leq n$ ← rewrite to graph

$n \geq -15$

Reminder to solve 2-step EQ's

① UNDO +, −

② UNDO ·, ÷

6.3 Notes: SOLVE MULTI-STEP INEQ'S

TIP: TRY TO GET variable on the left side (x _ #)

Solve linear inequalities involving two-steps. Clearly show EACH STEP. Circle your answer. Then graph the solution.

15) $11 - 4n \geq 7 - 5(8n - 8)$

$-4N+11 \geq 7-40N+40$

$-4N+11 \geq -40N+47$ ← TIP

$+40N \quad +40N$

$36N+11 \geq 47$

$-11 \quad -11$

$\frac{36N}{36} \geq \frac{36}{36}$

$N \geq 1$

16) Your Notes

→ SOLVE LIKE AN EQ + GRAPH

→ TIP: Mentally check n=0 To see if the graph is correct

C: $11 \geq 47$ (F)

17) $-8r - 2 < -(8r - 5)$

$-8R-2 < -8R+5$

$+8R \quad +8R$

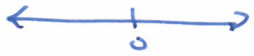
$-2 < 5$ (T)

18) Your Notes

when the variable drops OUT AND THE STMT IS TRUE

R = ALL REAL #'S

Graph: optional



19) $-7(a - 3) + 5a < -2(-5 + a)$

$-7A+21+5A < 10-2A$

$-2A+21 < -2A+10$

$+2A \quad +2A$

$21 < 10$ (F)

20) Your Notes

when the variable drops out and the STMT IS FALSE

A = NO SOLUTION

optional graph ∅

21) $8(1 + 5x) > -3x + 8$

$8+40X > -3X+8$

$+3X \quad +3X$

$43X+8 > 8$

$-8 \quad -8$

$\frac{43X}{43} > \frac{0}{43}$

$X > 0$

6.2 PRACTICE

Date: _____ Per: ____

Why Did the Little Leaguer Chase His Sister?

For each exercise, write the letter of the answer in the box containing the exercise number. If the answer has a ●, shade in the box instead of writing a letter in it.

1 $\frac{3n}{3} > \frac{24}{3}$ $n > 8$ **A**	**2** $-3n > 24$	**3** $n - 3 > 24$	**E** $n > 27$ **A** $n > 8$ ✓ **S** $n < 27$ **T** $n < -8$
4 $-5y \leq 30$	**5** $-5y \geq -30$	**6** $5y \leq -30$	● $y \leq 6$ **B** $y \geq 6$ **S** $y \leq -6$ **I** $y \geq -6$
7 $\frac{a}{2} < 9$	**8** $-\frac{a}{2} > 9$	**9** $-\frac{a}{2} < -9$	**V** $a > -18$ **A** $a < -18$ ● $a > 18$ **E** $a < 18$
10 $x + 7 \leq -4$	**11** $\frac{x}{7} \geq -4$	**12** $-\frac{x}{7} \geq 4$	**P** $x \geq -28$ **N** $x \leq -28$ **U** $x \leq 28$ **H** $x \leq -11$
13 $32 > 16k$	**14** $32 > -16k$	**15** $-16k < -32$	● $k > -2$ **A** $k < 2$ **G** $k > 2$ **D** $k < -2$
16 $-\frac{1}{4}q \leq 20$ $\cdot -4$ $Q \geq -80$	**17** $-20 \geq q - 4$ $+4 \quad +4$ $-16 \geq Q$ $Q \leq -16$	**18** $\frac{-20}{-4} \geq \frac{-4q}{-4}$ switch $5 \leq Q$ rewrite $Q \geq 5$	**R** $q \leq -16$ ● **X** $q \leq -5$ **H** $q \geq -80$ ✓ ● $q \geq 5$ ●
19 $15 > -\frac{1}{3}b$	**20** $-15 < -\frac{b}{3}$	**21** $-b > 45$	**F** $b > 45$ **C** $b < -45$ **W** $b > -45$ **Y** $b < 45$
22 $60 \geq -12x$	**23** $22 \geq x + 27$	**24** $99 \leq -x$	**C** $x \leq -99$ **H** $x \geq -5$ ● $x \geq -99$ **L** $x \leq -5$

16	3	9	19	1	6	14	11	23	8	20	4	12	15	18	21	13	2	24	10	5	22	7	17
H				A										●									R

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