6.3 Practice B - Graph & Solve Inequalities (2024) Date_____ Period____

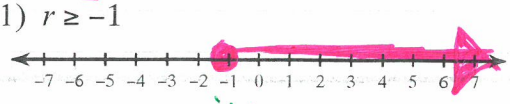
(A) **Your Notes on Graphing Inequalities:**

- CLOSED DOTS (●) $\leq, \geq, =$ VS. OPEN DOTS (○) $<, >, \neq$
- WRITE INEQ'S SO THE VARIABLE IS FIRST

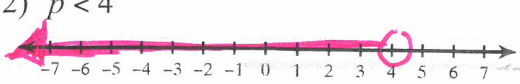
EX $5 < x \longrightarrow x > 5$ Rewrite

Draw a graph for each inequality. REWRITE the inequailty with the variable first.

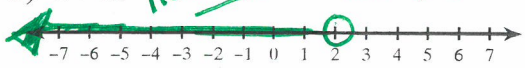
1) $r \geq -1$



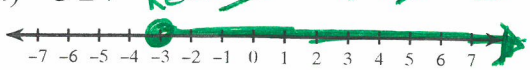
2) $p < 4$



3) $2 > m$ Rewrite $m < 2$

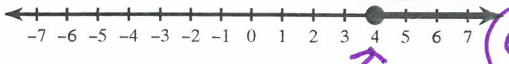


4) $-3 \leq v$ Rewrite $v \geq -3$



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

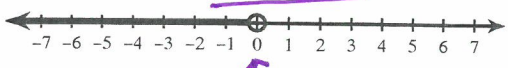
5) $x \geq 4$



CLOSED DOT

4 is a solution

6) $x < 0$



open dot

'0' IS NOT A SOLUTION

Your Notes on Solving Inequalities:

(1) FLIP THE SYMBOL WHEN YOU MULT OR DIVIDE THE VARIABLE BY A NEGATIVE NUMBER.

(2) GRAPH IT!

(C) **Solve linear inequalities. Clearly show WORK. Circle the solution. Then graph the solution.**

7) $-10 \geq \frac{x}{5}$ ISOLATE THE VARIABLE LIKE YOU SOLVE EQ'S

$\cdot 5 \quad \cdot 5$

$-50 \geq x$ DO NOT FLIP

Rewrite so X comes first

$x \leq -50$

8) $0 < -4a$

$\div -4 \quad \div -4$ FLIP

$0 > a$ REWRITE

$a < 0$

Solve linear inequalities. Clearly show WORK. Circle the solution. Then graph the solution.

9) $-(x+9) < -24$

$-x-9 < -24$

$+9 \quad +9$

$-x < -15$

$\frac{-x}{-1} < \frac{-15}{-1}$ FLIP

$x > 15$

10) $\frac{x}{-3} - 1 > -4$

$+1 \quad +1$

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

$-3 \cdot \frac{x}{-3} > -3 \cdot -3$

$x < 9$ FLIP

11) $2 - 2(7 + 7x) \leq -7x + 30$

$2 - 14 - 14x \leq -7x + 30$

$-14x - 12 \leq -7x + 30$

$+7x \quad +7x$

$-7x - 12 \leq 30$

$+12 \quad +12$

$\frac{-7x}{-7} \leq \frac{42}{-7}$ FLIP

$x \geq -6$

12) $5(-6n + 5) < -7 + 2n$

$-30n + 25 < 2n - 7$

$-2n \quad -2n$

$-32n + 25 < -7$

$-25 \quad -25$

$\frac{-32n}{-32} < \frac{-32}{-32}$ FLIP

$n > 1$

13) $-22 - 4x \leq -3(4 + 2x)$

$-4x - 22 \leq -12 - 6x$

$+6x \quad +6x$

$2x - 22 \leq -12$

$+22 \quad +22$

$\frac{2x}{2} \leq \frac{10}{2}$

$x \leq 5$

TIP: Get Variable on the left side

14) $-3(5x - 7) + 2x < 3 - 4x$

$-15x + 21 + 2x < -4x + 3$

$-13x + 21 < -4x + 3$

$+4x \quad +4x$

$-9x + 21 < 3$

$-21 \quad -21$

$\frac{-9x}{-9} < \frac{-18}{-9}$ FLIP

$x > 2$

SPECIAL CASES:

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

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

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

$-4N + 11 \geq -40N + 47$

$+40N \quad +40N$

$36N + 11 \geq 47$

$-11 \quad -11$

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

$N \geq 1$

16) Your Notes

① GET VARIABLE ON THE LEFT SIDE

② Circle Solution

③ Graph it

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

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

$+8R \quad +8R$

$-2 < 5$ (T)

R = all real numbers

18) Your Notes SPECIAL CASE #1

- when the variable drops out
- AND THE statement is TRUE

* The solution is all real numbers

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

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

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

$+2A \quad +2A$

$21 < 10$ (F)

A = NO SOLUTION

$\emptyset$ ← NO Graph

20) Your Notes SPECIAL CASE #2

- Variable dropped out
- False statement
- There is NO Solution

21) $8(1 + 5x) > -3x + 8$ ← MOST COMMON ERROR

$8 + 40X > -3X + 8$ ← GET VARIABLE ON LEFT SIDE

$+3X \quad +3X$

$43X + 8 > 8$

$-8 \quad -8$

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

$X > 0$