

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 (○) $<$, $>$, $\neq$ → CLOSED DOT (●) $\leq$, $\geq$, $=$ (CLOSED DOTS INCLUDE THE #)

EX] $x \geq 5$

Variable

Symbol

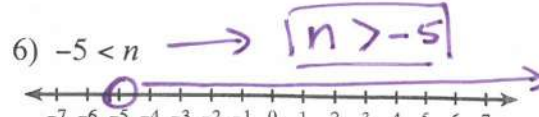
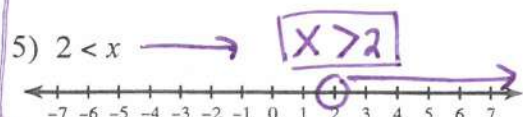
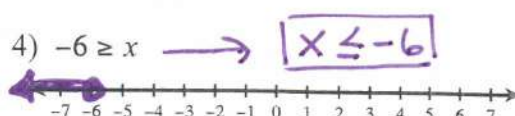
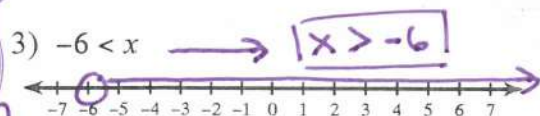
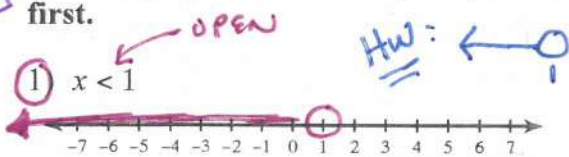
5 6 7 ... ∞

The solution are all numbers greater than and including 5

WRITE INEQ'S!

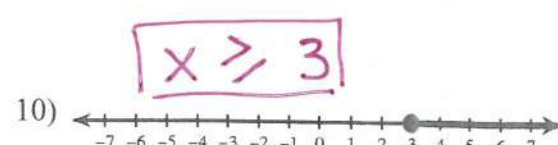
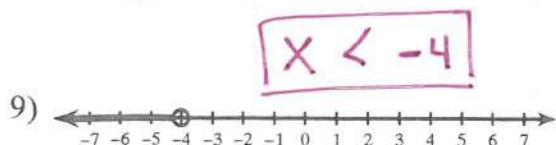
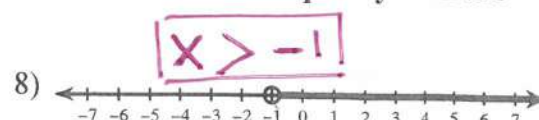
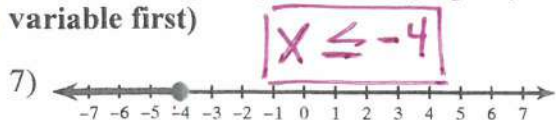
THEN YOUR SYMBOL AND ARROW GO IN THE SAME DIRECTION

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



Rewrite w/ Variable 1st

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



Remember:

$<$ "less than"

$>$ "greater than"

SOLVING INEQUALITIES

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

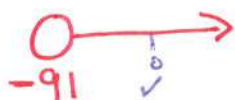
- ① we switch the symbol when we mult or divide the variable by a negative number
- ② ALWAYS Graph to show all the solutions

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

11) $\frac{x}{13} > -7$ •13

$x > -91$

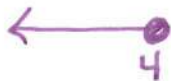
← SOLUTION



Tip: mentally check $x=0$

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

$$\begin{array}{r} -8 \quad -8 \\ -6x + 8 \geq -16 \\ \hline -6x \geq -24 \\ \hline -6 \quad -6 \\ \hline x \leq 4 \end{array}$$



12) $\frac{-11n}{-11} < \frac{55}{-11}$

$n > -5$

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



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

$$\begin{array}{r} -2 \quad -2 \\ -1 \leq \frac{n}{5} + 2 \\ \hline -3 \leq \frac{n}{5} \\ \hline 5(-3) \leq \left(\frac{n}{5}\right) 5 \\ \hline -15 \leq n \end{array}$$

← DONOT SWITCH

← rewrite to graph

$n \geq -15$



Reminder to solve 2-step EQ's

- ① UNDO +, -
- ② UNDO $\times, \div$

6.3 Notes:

Solve multi-step inequalities

Tip: Try to get variable on the left side (x, y)

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

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

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

$$-4n + 11 \geq -40n + 47 \leftarrow \text{Tip}$$

$$\begin{array}{r} +40n \\ \hline 36n + 11 \geq 47 \end{array}$$

$$\begin{array}{r} -11 \\ \hline 36n \geq 36 \end{array}$$

$$\begin{array}{r} 36 \\ \hline n \geq 1 \end{array}$$

$$\boxed{n \geq 1}$$

* 0 1 $\rightarrow$

16) Your Notes

 $\rightarrow$ Solve like an EQ
 $\leftarrow$ Graph $\rightarrow$ Tip: Mentally check $n=0$
To see if the graph
is correct

$$C: 11 \geq 47 \text{ (F)}$$

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

$$-8r - 2 < -8r + 5$$

$$\begin{array}{r} +8r \\ \hline -2 < 5 \end{array}$$

$$-2 < 5 \text{ (T)}$$

18) Your Notes

When the variable drops
out AND the stmt
is TRUE

$$\boxed{R = \text{ALL REAL \#s}}$$

Graph:
Optional $\leftarrow \rightarrow$

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

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

$$-2a + 21 < -2a + 10$$

$$\begin{array}{r} +2a \\ \hline 21 < 10 \end{array}$$

$$21 < 10 \text{ (F)}$$

20) Your Notes

When the variable drops
out and the stmt
is FALSE

$$\boxed{A = \text{NO SOLUTION}}$$

Optional
Graph ϕ

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

$$\begin{array}{r} 8 + 40x \\ +3x \\ \hline 43x + 8 \end{array} > \begin{array}{r} -3x + 8 \\ +3x \\ \hline -8 \end{array}$$

$$\begin{array}{r} 43x + 8 \\ -8 \\ \hline 43x > 0 \end{array}$$

$$\begin{array}{r} 43x > 0 \\ \hline x > 0 \end{array}$$

$$\boxed{x > 0}$$

$$0 \rightarrow$$

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 $\bullet$, shade in the box instead of writing the letter.

1 $\frac{8n}{3} > \frac{24}{3}$

$n > 8$ 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 $y \leq 6$

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 $a > 18$

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 $k > -2$

A $k < 2$

G $k > 2$

D $k < -2$

16 $-\frac{1}{4}q \leq 20$
 $-4 \cdot -\frac{1}{4}q \leq 20 \cdot -4$
 $Q \geq -80$

17 $-20 \geq q - 4$
 $+4 \quad +4$
 $-16 \geq Q$
 $Q \leq -16$

18 $-20 \geq -\frac{4}{4}q$
 $-4 \quad -4$
 $5 \leq q$
 $Q \geq 5$
Switch
rewrite

R $q \leq -16$

X $q \leq -5$

H $q \geq -80$ ✓

q $q \geq 5$

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 $x \geq -99$

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