

## 3.2 & 3.3 QUICK NOTES

(\*) Verbal  $\rightarrow$  How is solving an inequality & an equation the same/different?

Same  $\Rightarrow$  isolate the variable by undoing operations

different  $\Rightarrow$  • FLIP the inequality if you mult/divide  
• when you check, since the inequality has an infinite # of solutions, make it an equal sign & check that end pt.

(\*) In notes complete: solve & check

①  $y + \frac{1}{8} < -\frac{3}{8}$    ②  $2x \leq -\frac{5}{8}$    ③  $1 \leq -\frac{x}{2}$   $\Rightarrow$

$y < -\frac{1}{2}$

$x \leq -\frac{5}{16}$

$x \leq -2$

\* DO NOT  
FLIP

\* DO NOT  
FLIP

\* FLIP

\* Make sure all variables are written / st

(\*) Complete the God, it<sup>#4</sup> on pg. 174.

\* Write the inequality <sup>and solve</sup> for Got it #4 on pg. 174

(A)  $25 \leq 8 + 9 + x$   
 $x \geq 8$  plants

The club can sell no less than 8 plants to meet their goal

(B) Yes " $\geq$ " symbol can represent all 3

\* Got it #3a pg. 180

$$10.68x \leq 50$$

$$x \leq 4.68$$

The club can buy 1, 2, 3 or 4 caps.

Must write a sentence with your answer for all word problems

(4)  $\frac{x}{-3} < -2$

$$-3 \left( \frac{x}{-3} < -2 \right)$$

$$x > 6$$

\* FLIP

# \* Longer Detailed Notes

## 3.2 & 3.3 Solving Inequality

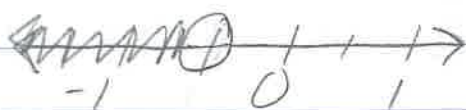
\* Solving Inequalities is the same as solving equations EXCEPT when your last step is multiplication or division by a negative, then FLIP your inequality sign.

(All the properties of Equality with equations exist with Inequalities. They are the Properties of Inequalities.)

\* Equivalent Inequalities - inequalities that have the same solutions.

Examples:

$$\begin{aligned} \textcircled{1} \quad y + \frac{1}{8} &< -\frac{3}{8} \\ -\frac{1}{8} \quad -\frac{1}{8} & \\ y &< -\frac{4}{8} \\ y &< -\frac{1}{2} \end{aligned}$$



check:

- the inequality has infinitely many solutions, so you cannot check them all
- However you can verify that the final inequality is correct by checking its endpt. & direction of the symbol  $\rightarrow$

Check:  $y + \frac{1}{8} = -\frac{3}{8}$

$$-\frac{1}{2} + \frac{1}{8} = -\frac{3}{8}$$

$$-\frac{4}{8} + \frac{1}{8} = -\frac{3}{8}$$

$$-\frac{3}{8} = -\frac{3}{8}$$

②  $2x \leq -\frac{5}{8}$

$$\frac{1}{2} \left( 2x \leq -\frac{5}{8} \right)$$

$$x \leq -\frac{5}{8} \cdot \frac{1}{2}$$

$x \leq -\frac{5}{16}$

\* Do not flip the sign because you did not multiply by a negative ≡

③  $1 \leq -\frac{x}{2}$

$$\left( 1 \leq -\frac{x}{2} \right) \cdot \frac{-2}{1}$$

$$-2 \leq x$$

$$-2 \geq x$$

\* FLIP the sign because you multiplied by a negative

$x \leq -2$

\* Rewrite variable 1<sup>st</sup>

\* Got it? #1, 2, & 3 on pages 172 & 173

\* Got it? #1, 2, & 4 on pages 179-181.

3.2

Got it? #1 pg. 172

Got it? #2

①  $n - 5 < -3$

+5 +5

$n < 2$



②  $m - 11 \geq -2$

+11 +11

$m \geq 9$



check:  $9 - 11 = -2$   
 $-2 = -2 \checkmark$

Got it? #3 pg. 173

Got it #1 pg. 179

③  $-1 \geq y + 12$

-12 -12

$-13 \geq y$

$y \leq -13$



①  $\frac{c}{8} > \frac{1}{4}$

$8 \left( \frac{c}{8} > \frac{1}{4} \right)$

$c > \frac{1}{4} \cdot \frac{8}{1}$

$c > 2$

Got it #2 pg. 180

②  $-\frac{n}{3} < -1$

$-3 \left( -\frac{n}{3} < -1 \right)$

$n < 3$  \*FLIP

$n > 3$



check:

$-\frac{n}{3} = -1$

$-\frac{3}{3} = -1$

$-1 = -1$

Got it? #4 on pg. 181

$$\textcircled{4} \quad \frac{-5x > -10}{-5}$$

$$x > 2$$

$$\textcircled{x < 2} \quad * \text{FLIP}$$



\* Review Problem 4 on pg. 173

\* Got it? #4 on pg. 174

$$\textcircled{4a} \quad \begin{aligned} 25 &\leq 8 + 9 + x \\ 25 &\leq 17 + x \\ -17 \quad -17 & \\ 8 &\leq x \\ x &\geq 8 \end{aligned}$$

$\textcircled{b}$  Yes, " $\geq$ " symbol can represent all 3

\* Review Problem 3 on pg. 180

\* Got it? #3a on pg. 180

$$\textcircled{3a} \quad \frac{10.68x \leq 50}{10.68}$$

$$x \leq 4.68$$

The club can buy 1, 2, 3 or 4 cases.

#42 & #43  
#54 - 66 even

#34 - 42 EOE

3.2 pg. 175 #14 - 26 EOE, #54 -

#43

#54 -

$$\begin{aligned} (14) \quad v - 4 &< -3 \\ +4 \quad +4 \end{aligned}$$

$$v < 1$$

$$\begin{aligned} (18) \quad s - 10 &\leq 1 \\ +10 \quad +10 \end{aligned}$$

$$s \leq 11$$

$$\begin{aligned} (22) \quad z - 12 &\leq -4 \\ +12 \quad +12 \end{aligned}$$

$$z \leq 8$$

\*See graphs on txtbk

$$\begin{aligned} (26) \quad -2.5 > n - 0.9 \\ +0.9 \quad +0.9 \end{aligned}$$

$$-1.6 > n$$

$$n < -1.6$$

$$\begin{aligned} (34) \quad n + 6 > -2 \\ -6 \quad -6 \end{aligned}$$

$$n > -8$$

$$\begin{aligned} (38) \quad 8.6 + z < 14 \\ -8.6 \quad -8.6 \end{aligned}$$

$$z < 5.4$$

$$\begin{aligned} (42) \quad 10,000 &\leq 5274 + x \\ -5274 \quad -5274 \end{aligned}$$

$$4726 \leq x$$

$$x \geq 4,726$$

$$\begin{aligned} (43) \quad 10 &\leq 3 + 4 + x \\ 10 &\leq 7 + x \end{aligned}$$

$$-7 \leq -7$$

$$3 \leq x$$

$$x \geq 3$$

$$\begin{aligned} (54) \quad y = 4 + 2 &\geq 10 \\ y - 2 &\geq 10 \end{aligned}$$

$$y - 2 \geq 10$$

$$+2 \quad +2$$

$$y \geq 12$$

$$(56) \quad z - 1.4 < 3.9$$

$$z < 5.3$$

$$(58) \quad a + 5.2 < -4.6$$

$$a < -9.8$$

$$(60) \quad \frac{5}{8} + v - \frac{7}{16} > 0$$

$$\frac{10}{16} + v - \frac{7}{16} > 0$$

$$v + \frac{3}{16} > 0$$

$$v > -\frac{3}{16}$$

$$(62) \quad 5y + 5 - 4y < 8$$

$$5 + y < 8$$

$$y < 3$$

$$(64) \quad 8v - 7v - 3 \geq -6$$

$$v - 3 \geq -6$$

$$+3 \quad +3$$

$$v \geq -3$$

$$(66) \quad \frac{2}{3}(2.50) \leq 48 + x$$

$$\frac{2}{3}(100) \leq 48 + x$$

$$66\frac{2}{3} \leq 48 + x$$

$$-48 \quad -48$$

$$18\frac{2}{3} \leq x$$

@least 19 senators  
must vote in favor  
of the treaty



3.3 pg. 181 8-48 EOE #58 & #59

(8)  $b(\frac{w}{6} < 1)$

$w < 6$

\* See  
 $f(x) = k$   
 for  
 graphs

(32)  $\frac{3.99x}{3.99} \leq 25$

$x \leq 6.27$

\* at the most 6 Tetras

(12)  $(-3 < \frac{x}{3}) \cdot 3$

$-9 < x$

$x > -9$

(36)  $0.5 > \frac{1}{2} c$

$(\frac{1}{2} > \frac{1}{2} c) \cdot 2$

$1 > 1c$

$c < 1$

(16)  $(-\frac{3}{2}b < 6) \cdot \frac{2}{3}$

$b < -4$

$b > -4$

\* Answers vary - anything  
 less than 1

(ex. -3, -2, -1, 0)

(20)  $4t < -12$

$t < -3$

(24)  $56 < -7d$

$-8 > d$

$d < -8$

(40)  $\frac{4}{3}(\frac{3}{4}b \leq 3) \cdot \frac{4}{3}$

\* multiply by  $\frac{4}{3}$

(28)  $8t \leq 64$

$t \leq 8$

(44)  $-2a > ?$

$a < -9$

$? = 18$

48) If  $x > 0$  &  $y \geq 0$ , then  $xy > 0$   
 $x=4, y=0$        $(4)(0) > 0$  FALSE

$x=4, y=4$        $(4)(4) > 0$  TRUE

SOMETIMES

58)  $55 \frac{\text{mi.}}{\text{hr}} x \geq 400 \frac{\text{mi.}}{\text{day}}$

$x \geq \frac{400}{55}$

$x \geq 7\frac{2}{11}$  or 7.27 hours

59)  $30 \geq 3(s + d)$

$30 \geq 3(4+1) + x$

$30 \geq 12 + 3 + x$

$30 \geq 15 + x$

$-15 \quad -15$

$15 \geq x$

\$15 left for snacks

lowest price snack  
 (pretzels @ \$1)  
 15 pretzels

$30 \geq 3(7+2) + x$

$30 \geq 21 + 6 + x$

$30 \geq 27 + x$

$-27 \quad -27$

$3 \geq x$

\$3 left for snacks

Most expensive snack  
 (brownie @ \$3)  
 1 Brownie

least expensive sandwiches & drinks

most expensive