

b.1 Solving

Dec. 11, 2006

Inequalities w/ Add. & Subt.

Recall:

1 Variable: 1 Dimension

2 Variables: 2 Dimensions

3 Variables: 3 Dimension



graph of an Inequality: the set
of points on a number line
(x-axis)
that represents all solutions
of the One Variable inequality

Real Numbers: All #'s, Pos. & Neg.
Including Fra. Dec. & 0

$(-\infty, \infty)$

Symbol $\rightarrow \mathbb{R}$

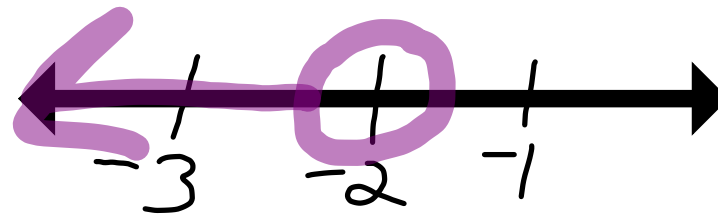
\mathbb{R}

Bold \mathbb{R}

Recall:

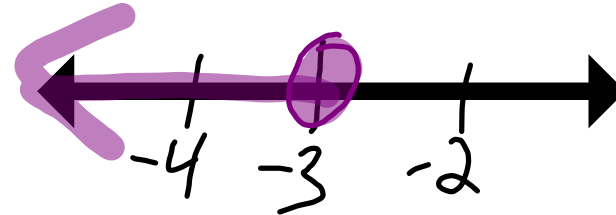
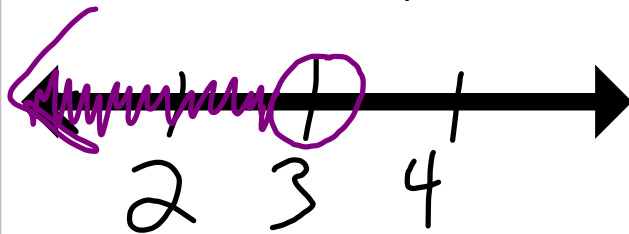
$$\begin{array}{r} x + 6 = 4 \\ -6 \quad -6 \\ \hline x = -2 \\ \hline \hline \end{array}$$

$$\begin{array}{r} x + 6 < 4 \\ -6 \quad -6 \\ \hline x < -2 \end{array}$$



$$\begin{array}{r} -2 > n - 5 \\ +5 \quad +5 \\ \hline 3 > n \end{array}$$

$$\begin{array}{r} p - 1 \leq -4 \\ +1 \quad +1 \\ \hline p \leq -3 \end{array}$$



b.2 Solving Inequalities w/ Multiplication + Division

Review:

$$\frac{5a}{5} = \frac{20}{5}$$

$$\underline{\underline{a=4}}$$

$$\frac{5a}{5} < \frac{20}{5}$$

$$\underline{\underline{a < 4}}$$

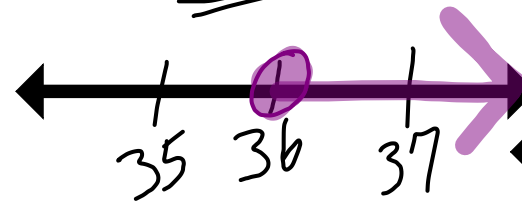


$$4 \cdot \frac{b}{4} = 9.4$$

$$\underline{\underline{b=36}}$$

$$4 \cdot \frac{b}{4} \geq 9.4$$

$$\underline{\underline{b \geq 36}}$$



Check 40:

$$\frac{40}{4} \stackrel{?}{=} 9$$

$$10 \geq 9 \checkmark$$

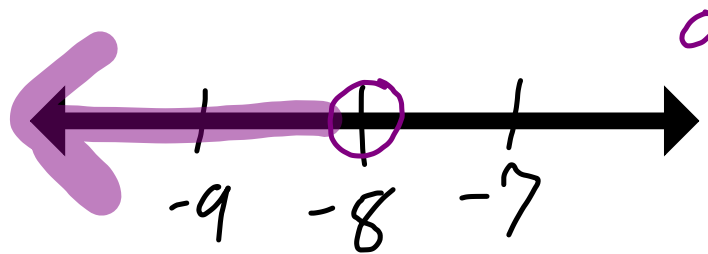
Review:

$$\frac{-4c}{-4} = \frac{32}{-4}$$

$$c = -8$$

$$\frac{-4c}{-4} > \frac{32}{-4}$$

$$c < -8$$



Check ○

$$-4(0) \stackrel{?}{>} 32$$

$$0 > 32 \dots \text{False!}$$

Check -10

$$-4(-10) \stackrel{?}{>} 32$$

$$40 > 32 \checkmark \text{ True}$$

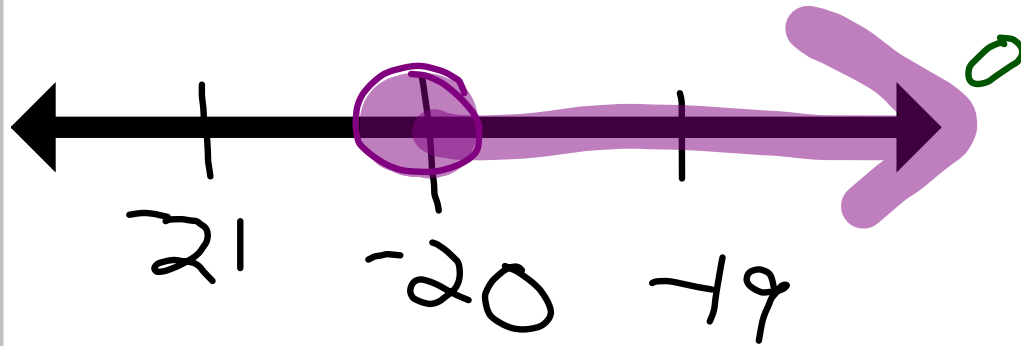
Conclusion:

If we need to Multiply
or Divide by a Neg. #
to Solve the Inequality
Then we **MUST** Switch
the Inequality Sign!

$$2\left(-\frac{1}{2}x\right) \leq 10 \div 2$$

$$x \geq -20$$

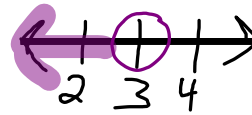
We Do
this 1st since
we had to *
By -2



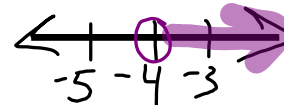
$$\begin{aligned} -\frac{1}{2}(0) &\stackrel{?}{\leq} 10 \text{ Check} \\ 0 &\leq 10 \checkmark \end{aligned}$$

Conclusions

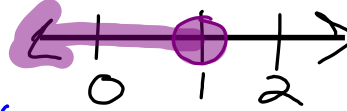
$x < 3$ All \mathbb{R} less 3
 $3 > x$



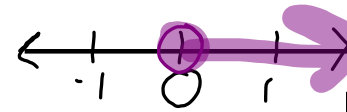
$a > -4$ All \mathbb{R} greater than -4
 $-4 < a$



$b \leq 1$ All \mathbb{R} less than or equal to 1



$c \geq 0$ All \mathbb{R} greater than or equal to 0



O.T.L.

① pg 326-327:

3, 6, 10, 12, 16, 24-28 (e)

41, 44, 50, 54

② pg 332: Summary Box
at the Bottom of the Page.
in Notes

③ pg 333: 15-31 (o)
Show Work.