

3.3- > SOLVING INEQUALITIES USING MULTIPLICATION AND DIVISION

Investigation:

Consider the inequality $4 > 1$

Compare the new solution using: $>$, \geq , $<$, \leq

Directions (Do to each side)	Show Work		New Inequality
1. Add 1	$4 + 1$	$1 + 1$	$5 > 2$
2. Subtract 1	$4 - 1$	$1 - 1$	$3 > 0$
3. Add (-1)	$4 + (-1)$	$1 + (-1)$	$3 > 0$
4. Subtract (-1)	$4 - (-1)$	$1 - (-1)$	$5 > 2$
5. Multiply by 1	$4(1)$	$1(1)$	$4 > 1$
6. Divide by 1	$\frac{4}{1}$	$\frac{1}{1}$	$4 > 1$
* 7. Multiply by (-1)	$4(-1)$	$1(-1)$	$-4 < -1$
* 8. Divide by (-1)	$\frac{4}{-1}$	$\frac{1}{-1}$	$-4 < -1$

Circle the rules that required you to change the direction of the inequality symbol. What do you notice?

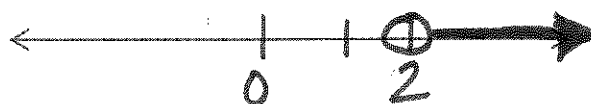
When you multiply or divide BOTH sides of an inequality by a Negative number, FLIP the inequality symbol.

3.3 Notes: Algebra 1

Solve each inequality. Graph your solution.

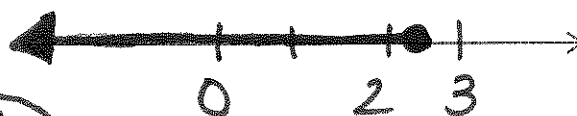
$$1. \quad \cancel{4} \frac{b}{4} > \frac{1}{2} (4)$$

$$b > 2$$



$$2. \quad \cancel{3} \frac{d}{3} \leq \frac{5}{6} (3)$$

$$d \leq \frac{15}{6} \quad d \leq 2\frac{1}{2}$$



$$3. \quad \cancel{3} \frac{z}{3} \geq -2 (3)$$

$$z \geq -6$$



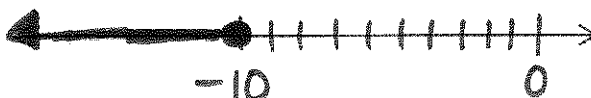
$$4. \quad \cancel{4} \frac{k}{4} > -1 (-4)$$

$$k > 4$$



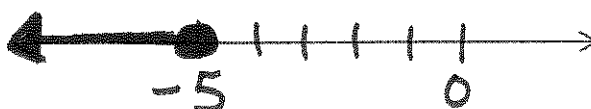
$$5. \quad \cancel{5} \frac{3}{5} w \geq 6 (-\frac{5}{3})$$

$$w \leq -10$$



$$6. \quad \cancel{5} \frac{3}{5} \leq -\frac{3}{5} x (\frac{5}{3})$$

$$\begin{array}{l} -5 \geq x \\ \text{or} \\ x \leq -5 \end{array}$$



FLIP

FLIP

FLIP

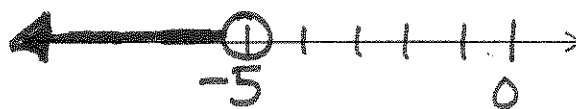
3.3 Notes: Algebra 1

Solve each inequality. Graph your solution.

$$7. \frac{-4t}{-4} > \frac{20}{-4}$$

FLIP

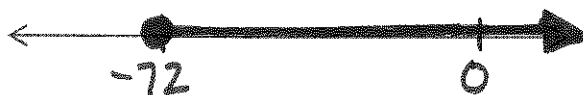
$$t < -5$$



$$8. (-2)36 \geq -\frac{1}{2}y(-2)$$

FLIP

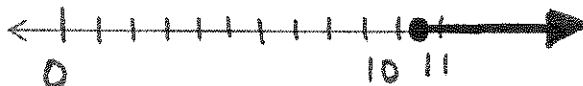
$$\begin{aligned} -72 &\leq y \\ \text{OR} \\ y &\geq -72 \end{aligned}$$



$$9. (-3)\frac{s}{3} \leq -3.5(-3)$$

FLIP

$$s \geq 10.5$$



$$10. \frac{-2t}{-2} < \frac{-8}{-2}$$

FLIP

$$t > 4$$



$$11. \frac{4c}{4} \geq \frac{-24}{4}$$

$$c \geq -6$$



$$12. \frac{-3w}{-3} \geq \frac{12}{-3}$$

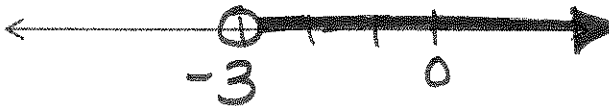
FLIP

$$w \leq -4$$



$$13. \frac{3t}{3} < \frac{-9}{3}$$

$$t > -3$$



$$14. \frac{10}{-2} \leq \frac{-2w}{-2}$$

FLIP

$$\begin{aligned} -5 &\geq w \\ \text{OR} \\ w &\leq -5 \end{aligned}$$

