

12-21-17

Aim: SWBAT study the effects negatives have on an inequality.

HW: Finish WS

Do Now: Take out Page 150 and 151 homework assignments

## Homework Pg. 150 # 2 - 10, 20

2. C

3. A

4. B

5. D

6.  $x > -2$

all numbers greater than  $-2$ .

7.  $x \geq -5$

All numbers greater than or equal to  $-5$ .

8.  $x \leq 2$

All numbers less than or equal to  $2$ .

9.  $x < 6$

All numbers less than  $6$ .10. The circle at  $-6$  should be closed.

\* 20. B

23?

~~$x - 3 > 20$~~

\*  $x - 3 \geq 20$

$20 < x - 3$

$x - 3 < 20$

Pg. 151 # 11-19, 21-29

$$\begin{aligned} (11) \quad 12 + p &< 7 \\ -12 \quad -12 \\ \hline p &< -5 \end{aligned}$$

A number line with a solid circle at -5 and an arrow pointing to the right, representing the inequality  $p > -5$ .

$$\begin{aligned} (12) \quad k + 4 &\leq 11 \\ -4 \quad -4 \\ \hline k &\leq 7 \end{aligned}$$

A number line with a solid circle at 7 and an arrow pointing to the left, representing the inequality  $k < 7$ .

$$\begin{aligned} (13) \quad n - 6 &> 3 \\ +6 \quad +6 \\ \hline n &> 9 \end{aligned}$$

A number line with a solid circle at 9 and an arrow pointing to the left, representing the inequality  $n < 9$ .

$$\begin{aligned} (14) \quad 17 + r &\geq 25 \\ -17 \quad -17 \\ \hline r &\geq 8 \end{aligned}$$

A number line with a solid circle at 8 and an arrow pointing to the left, representing the inequality  $r < 8$ .

$$\begin{aligned} (15) \quad -8 &\geq m - 19 \\ +19 \quad +19 \\ \hline 11 &\geq m \end{aligned}$$

A number line with a solid circle at 11 and an arrow pointing to the left, representing the inequality  $m < 11$ .

$$\begin{aligned} (16) \quad -3.5 &< w - 9 \\ +9 \quad +9 \\ \hline 5.5 &< w \end{aligned}$$

A number line with a solid circle at 5.5 and an arrow pointing to the right, representing the inequality  $w > 5.5$ .

$$\begin{aligned} (17) \quad 5.45 + b &< -3.55 \\ -5.45 \quad -5.45 \\ \hline b &< -9 \end{aligned}$$

A number line with a solid circle at -9 and an arrow pointing to the right, representing the inequality  $b > -9$ .

$$\begin{aligned} (18) \quad \frac{2}{3} &\leq p - 2\frac{1}{3} \\ +2\frac{1}{3} \quad +2\frac{1}{3} \\ \hline 3 &\leq p \end{aligned}$$

$p \geq 3$

A number line with a solid circle at 3 and an arrow pointing to the right, representing the inequality  $p > 3$ .

$$\begin{aligned} (19) \quad t + \frac{1}{4} &> 5 \\ -\frac{1}{4} \quad -\frac{1}{4} \\ \hline t &> 4\frac{3}{4} \end{aligned}$$

A number line with a solid circle at  $4\frac{3}{4}$  and an arrow pointing to the right, representing the inequality  $t > 4\frac{3}{4}$ .

1, 2, 3, 4, 5, 6, 7, 8, 9

(21) 1 through 9

$$\begin{array}{r} -8 + x \leq 2 \\ +8 \quad +8 \\ \hline x \leq 10 \end{array}$$

(22) 6 through 9  $x \leq 10$

(23) 1 through 9

(24) 1 through 4

(25)  $x + 6 < 10$

$$x < 4 \quad 4 > x$$

(26)  $x > -10$   $-10 < x$



(27)  $x > 19$   $19 < x$

(28)  $x < -7$   $-7 > x$

\* (29) Are  $x < 2$  and  $2 > x$  equivalent?

Yes. When  $x$  is less than 2, 2 is greater than  $x$ .

Equivalent Inequality: Inequalities that have the same solutions.

Write an equivalent inequality for each. (All you need to do is reverse the entire statement.)

1.  $5 \leq x$

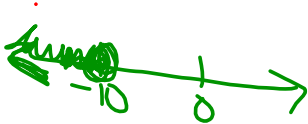
$x \geq 5$



If 5 is less than or equal to all numbers, then all numbers are greater than or equal to 5.

2.  $-10 \geq x$

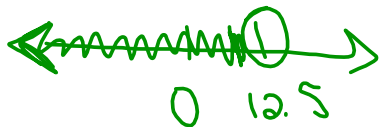
$x \leq -10$



If -10 is greater than or equal to all numbers, then all numbers are less than or equal to -10.

3.  $12.5 > x$

$x < 12.5$



If 12.5 is greater than all numbers, it is also true that all numbers are less than 12.5.

Multiply each side of the inequality by 3.  
Does the inequality statement stay true?

$$\begin{array}{l} 3 \cdot 6 < 9 \cdot 3 \\ 18 < 27 \quad \text{TRUE} \end{array}$$

Divide each side of the inequality by 3.  
Does the inequality statement stay true?

$$\begin{array}{l} \frac{6}{3} < \frac{9}{3} \\ 2 < 3 \quad \text{TRUE} \end{array}$$

Is the final inequality true? (Yes or No) If not, what can be changed to make it true?

Multiply each side of the inequality by -3. Does the inequality statement stay true?

$$\begin{aligned} (-3)6 &< 9(-3) \\ -18 &< -27 \text{ FALSE} \\ -18 &> -27 \text{ TRUE} \end{aligned}$$

Divide each side of the inequality by -3. Does the inequality statement stay true?

$$\begin{aligned} \frac{6}{-3} &< \frac{9}{-3} \\ -2 &< -3 \text{ FALSE} \\ -2 &> -3 \text{ TRUE} \end{aligned}$$

Is the final inequality true? (Yes or No) If not, what can be changed to make it true?

The inequality symbol needs to reverse.

If you multiply or divide an inequality by a positive number, the symbol stays the same.

If you multiply or divide an inequality by a negative number, the symbol needs to flip.

a neg. coefficient  
OR  
a neg. denominator



Should the inequality symbol be switched?

$$-5 \geq 2 + x$$

N

$$9 \leq \frac{x}{4}$$

N

$$-8 + x \leq 2$$

N

$$-3x \leq 18$$

Y

$$\frac{x}{-8} \geq 9$$

Y

$$7x \leq 42$$

N

$$x - 4 \geq -2$$

N

$$-60 > -5x$$

Y

$$7 + x \leq 3$$

N

Name \_\_\_\_\_

Date \_\_\_\_\_

**Reverse What???**

Period \_\_\_\_

Rewrite the inequality statement so the variable is on the left.

$1 < x$ $x > 1$	$2 > x$	$\frac{1}{3} \leq x$	$4 \geq x$	$\frac{1}{5} \leq x$
$-1 < x$	$-2 > x$	$-\frac{1}{3} \leq x$	$-4 \geq x$	$-\frac{1}{5} \leq x$

State if the inequality symbol will reverse. Highlight the part of the inequality statement that decides the reversal.

$x < 6$ $N$	$-2x \leq 4$ $Y$	$\frac{x}{5} \geq -3$ $N$	$-\frac{x}{8} > -2$	$-1 < x$
$-x < 6$	$2x \leq 4$	$\frac{x}{-5} \geq -3$	$\frac{x}{8} > -2$	$1 < -x$
$-x < -6$	$2x \leq -4$	$\frac{-x}{5} \geq 3$	$\frac{x}{8} > 2$	$-1 < -x$
$x < -6$	$-2x \leq -4$	$\frac{-x}{5} \geq -3$	$\frac{x}{-8} > 2$	$1 < x$
$x + 1 < -6$	$-2x + 1 \leq -4$	$\frac{x}{5} + 1 \geq -3$	$2x + 3x - 1 \leq -4$	$2(x - 1) \leq -4$
$x - 1 < -6$	$2x - 1 \leq -4$	$\frac{-x}{5} - 1 \geq -3$	$2x - 3x - 1 \leq -4$	$-2(x - 1) \leq -4$

Create 3 inequality statements that would need the inequality symbol reversed for the final answer.

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