

## 1-5 Solving Inequalities

**Objective:** Solve Inequalities.  
Solve real-world problems involving inequalities.

For any two real numbers,  $a$  and  $b$ , exactly one of the following is true.

$$a < b, a = b, a > b$$

Whenever you multiply or divide by a negative number, flip the inequality symbol.

**Solve each and graph the solution.**

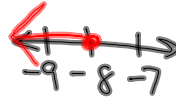
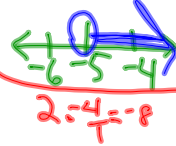
Ex 1)  $4y - 3 < 5y + 2$

$$\begin{array}{r} \cancel{4y} - 3 < \cancel{4y} + 2 \\ -3 < y + 2 \\ -2 & \quad -2 \\ \hline -5 < y \end{array}$$

$y > -5$   
Set-builder Notation  
 $\{y \mid y > -5\}$   
interval notation  
 $(-5, \infty)$

Ex 2)  $-25y \geq 2$

$$\begin{array}{r} \cancel{-25} y \geq 2 \\ \cancel{-25} \cdot -25 \\ y \leq -8 \end{array}$$



$$\begin{array}{l} y \mid y \leq -8 \\ \text{or} \\ (-\infty, -8] \end{array}$$

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Ex 1)  $4y - 3 < 5y + 2$

Ex 2)  $-25y \geq 2$

Ex 3)  $n/12 + 15 \leq 13$

$$\frac{n}{12} \leq -2 \cdot 12$$

$$n \leq -24$$

$$n | n \leq -24$$

or  
 $(-\infty, -24]$



Ex 4) Alex has at most \$25.50 to spend at a gas station. He buys chips and soda for \$2.55. If gas costs \$3.70 per gallon, how many gallons of gas can he buy to the nearest tenth?

$x = \# \text{ of gallons of gas}$

$$2.55 + 3.70x \leq 25.50$$

$$\frac{3.70x}{3.70} = \frac{22.95}{3.70}$$

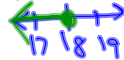
$$x = 6.2 \text{ gallons}$$



16)  $b - 3 \leq 15$

$$\frac{b}{b} \leq \frac{18}{18}$$

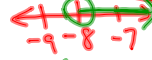
$$b | b \leq 18$$



$$(-\infty, 18]$$

18)  $d > -4.2$

$$d | d > -8$$



$$(-8, \infty)$$