

February 23, 2018

Section 6.5 **Solving Linear Inequalities by Using Multiplication and Division**

Does the inequality stay true?

Multiply each side by 2

$$\begin{aligned} &^{(2)} -4 < 2^{(2)} \\ &-8 < 4 \quad \text{yes} \end{aligned}$$

Divide each side by 2

$$\begin{aligned} &\text{yes} \quad \frac{-4}{2} < \frac{2}{2} \\ &\quad \quad \quad -2 < 1 \end{aligned}$$

Multiply each side by -2

$$\begin{aligned} &^{(-2)} -4 < 2^{(-2)} \\ &8 < -4 \quad \text{NO} \end{aligned}$$

Divide each side by -2

$$\begin{aligned} &\frac{-4}{-2} < \frac{2}{-2} \quad \text{NO} \\ &2 < -1 \end{aligned}$$

↖ If we reverse the sign we can make it true ↗

* When multiplying or dividing by a negative number in the **last step** of solving inequality you must **Reverse** the sign to make the inequality true

$$\begin{aligned} -2x + 4 &\leq 14 \\ -2x + \boxed{4-4} &\leq 14-4 \\ \underline{-2x} &\leq \underline{10} \quad \leftarrow \\ \underline{-2} &\quad \underline{-2} \\ x &\geq -5 \end{aligned}$$

Solve:

A. $\frac{-5x}{-5} < \frac{25}{-5}$
 $x > -5$

switch the sign!

B. $\frac{7a}{7} \leq \frac{-21}{7}$
 $a \leq -3$

$$-2(3 + 1.5n) < 4(2 - n)$$

Solve
Graph

$$-6 - 3n < 8 - 4n$$

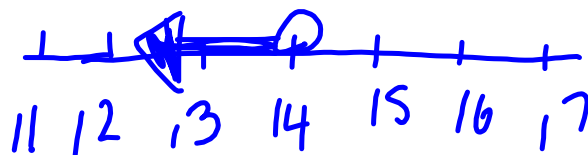
$$-6 - 3n + 4n < 8 - 4n + 4n$$

$$-6 + 1n = 8$$

$$-6 + 6 + 1n < 8 + 6$$

$$1n < 14$$

Graph



$$-6(2+6x) > 12+2x$$

Solve

Graph

$$-12-36x > 12+2x$$

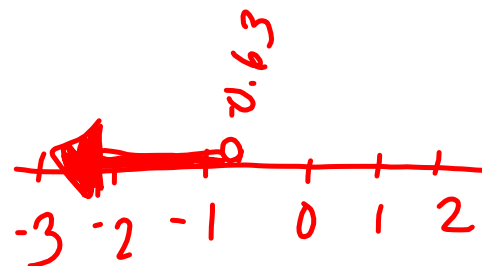
$$-12-36x-2x > 12+2x-2x$$

$$-12-38x > 12$$

$$-12+12-38x > 12+12$$

$$\frac{-38x}{-38} > \frac{24}{-38}$$

$$x < \frac{-24}{38} \quad x = -0.63$$



Remember Eliminate Fractions by Multiplying all terms by the LCM

$$\overset{(70)}{\frac{1}{2}} + \overset{(70)}{\frac{4p}{7}} > \overset{(70)}{\frac{13}{10}}$$

LCM = 70

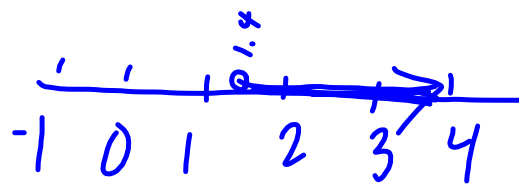
$$\frac{70}{2} + \frac{280p}{7} > \frac{910}{10}$$

$$35 + 40p > 91$$

$$\boxed{35-35} + 40p > 91-35$$

$$\frac{40p}{40} > \frac{56}{40}$$

$$p > 1.4$$



Your parents are celebrating their 25th wedding anniversary. They have compared the rates at two banquet halls. Fancy Feast charges \$200 for the hall plus \$30 per person. Beautiful Banquet charges \$400 for the hall plus \$20 per person.

a) Write a "let" statement.

b) How many people will have to attend to make company Beautiful Banquet less expensive than company Fancy Feast?



Homework

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3 all

a) $-9^{(4)} < -2^{(4)}$

$-36 < -8$ *yes*

- 9 [a,c,e]
 - 11 [a,c]
 - 17 [b]
- } Solve Graph

