

Homework Qs

Note Title

9/14/2015

2.5 #9 | One number is 4 less than 3 times another. If their sum is increased by 5, the result is 25. Find them.

one number: $3x - 4$
another number: x

One # $\xrightarrow[\text{to}]{\text{compared}}$ another #
 x

$$\underbrace{x + 3x - 4}_{\text{sum}} + 5 = 25$$

2.5 #5 | Five times the sum of a number and 7 is 30. Find the number.

number: x

$$5(\underbrace{x + 7}_{\text{sum}}) = 30$$

2.5 #19 | Pat is 20 years older than Patrick.
In 2 yrs, Pat will be twice as old as Patrick. How old are they now?

	Now	In 2 years
Pat	$x + 20$	$x + 20 + 2 = x + 22$
Patrick	x	$x + 2$

Pat's age now $\xrightarrow[\text{to}]{\text{compared}}$ Patrick's age now
 x

$$2(\text{Patrick's age in 2 yrs}) = \text{Pat's age in 2 yrs}$$
$$2(x + 2) = x + 22$$

2.5 #27) One side of a triangle is half the longest side. The 3rd side is 12' less than the longest side. Perimeter is 53'. Find the sides.

One side: $\frac{1}{2}x$
 longest side: x
 3rd side: $x - 12$

One side $\xrightarrow[\text{to}]{\text{compare}}$ longest side
 3rd $\xrightarrow[\text{to}]{\text{compare}}$ x

$$\frac{1}{2}x + x + x - 12 = 53$$

$$\frac{1}{2}x + 2x - 12 = 53$$

$$\frac{1}{2}x + \frac{4}{2}x - 12 = 53$$

$$\frac{5}{2}x - 12 = 53$$

$$\frac{5}{2}x = 65$$

$$\frac{2}{5}\left(\frac{5}{2}x\right) = \frac{65}{1}\left(\frac{2}{5}\right)$$

$$x = 26$$

Don't forget to write out the answer

2.5 #31) length of rectangle is 7 m more than twice the width. Perimeter is 68m.

length: $2x + 7$
 width: x

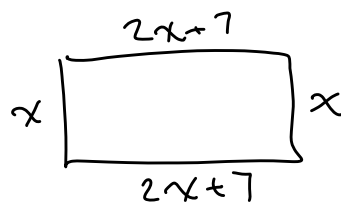
length $\xrightarrow[\text{to}]{\text{compare}}$ width x

$$(x) + (2x + 7) + (x) + (2x + 7) = 68$$

$$x + 2x + 7 + x + 2x + 7 = 68$$

or
 Perimeter =
 $2(\text{length}) + 2(\text{width})$

$$2(2x + 7) + 2x = 68$$



2.5 # 43 Total value: \$2.55

There are 6 more dimes than nickels and twice as many quarters as nickels. How many of each?

of nickels: x

of dimes: $x + 6$

of quarters: $2x$

dimes $\xrightarrow{\text{compare to}}$ # nickels
qtrs $\xrightarrow{\text{compare to}}$ # nickels x

$$25(2x) + 10(x+6) + 5x = 255$$

2.6 # 33: Jo Ann is paid \$12/hour for 1st 35 hours each week, and \$18 for each additional hour. If she makes \$492 one week, how many hours did she work?

Did she work more than 35 hours?

$$\begin{array}{r} 35 \\ 12 \\ \hline 70 \\ 35 \\ \hline 420 \end{array}$$

Let x = # of hours past 35
(# of overtime hours)

$$420 + 18x = 492$$

So yes, she worked more than 35 hours.

2.6 #29 | Adult BBO tickets are \$6 each
Kids tickets are \$4 each.

Total ticket sales are \$184.

He sells 6 more kid's tickets than adult tickets.

How many of each kind of ticket?

of kid tickets: $x+6$

of adult tickets: x

kids tickets $\xrightarrow{\text{compare to}}$ # adult tickets

$$4(x+6) + 6x = 184$$

2.7: Linear Inequalities (continued)

We will want to solve inequalities.

Solve = Find the solution set.

(the values of variable that make the inequality true).

Additive Property of Inequality

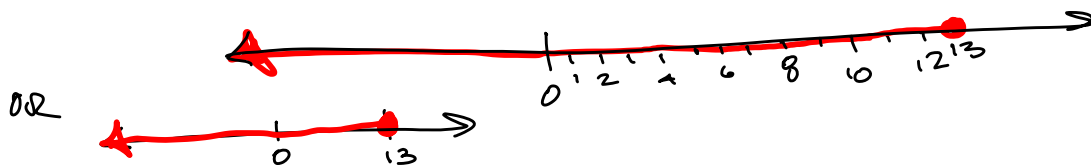
If $a < b$, then $a+c < b+c$

This means we can add (or subtract) the same expression on both sides.

Example: solve.

$$x + 5 \leq 18$$

$$\begin{array}{r} -5 \quad -5 \\ \hline x \leq 13 \end{array}$$



Multiplicative Property of Inequality

If $a < b$ and $c > 0$, then $ac < bc$.

If $a < b$ and $c < 0$, then $ac > bc$.

This means:

We can multiply (or divide) both sides by the same positive number.

We can multiply (or divide) both sides by the same negative number if we reverse the inequality sign.

Why? consider $1 < 2$. True.

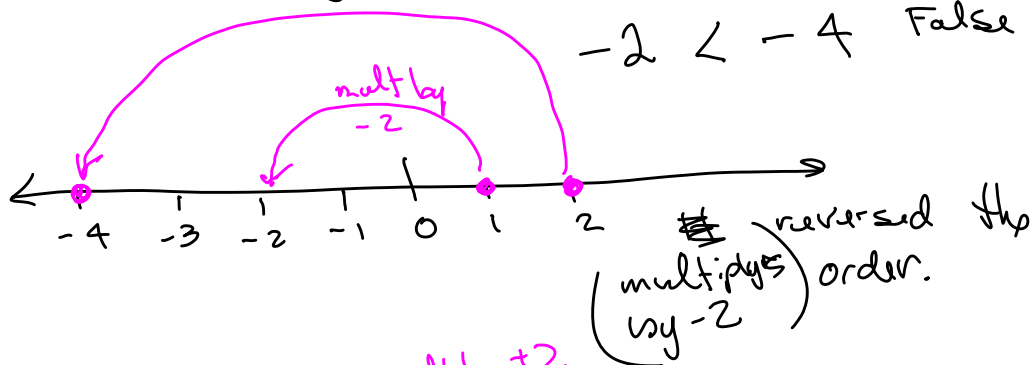
multiply both sides by 2: $(2)(1) < (2)(2)$

$2 < 4$ still true.

Back to $1 < 2$. True.

multiply both sides by -2 : $(-2)(1) < (-2)(2)$

$-2 < -4$ False



multiplying by $+2$ does not change the order.

Ex:

Solve.

$$4x \geq 20$$

$$\frac{4x}{4} \geq \frac{20}{4}$$

$$x \geq 5$$



Ex:

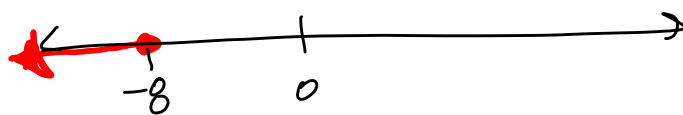
Solve.

$$-5x \geq 40$$

$$\frac{-5x}{-5} \leq \frac{40}{-5}$$

$$x \leq -8$$

↪ reverse the inequality sign



Ex:

Solve.

$$-6x > -24$$

$$\frac{-6x}{-6} < \frac{-24}{-6}$$

$$x < 4$$

↪ reverse the inequality sign

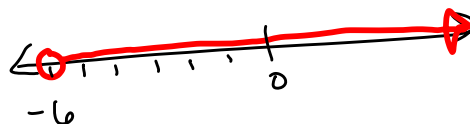


Ex: Solve.

$$2x > -12$$

$$\frac{2x}{2} > \frac{-12}{2}$$

$$x > -6$$



Ex:

Solve.

$$2x - 3 < 5x + 6$$

$-5x$ $-5x$

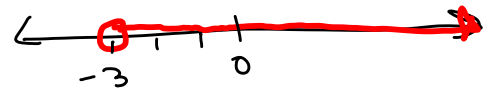
$$-3x - 3 < 6$$

$+3$ $+3$

$$-3x < 9$$

$$\frac{-3x}{-3} > \frac{9}{-3} \quad (\text{Reverse the inequality sign})$$

$$x > -3$$



OR

$$2x - 3 < 5x + 6$$

$-2x$ $-2x$

$$-3 < 3x + 6$$

-6 -6

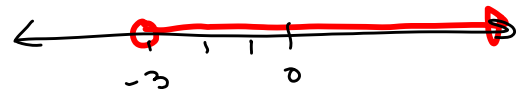
$$-9 < 3x$$

$$\frac{-9}{3} < \frac{3x}{3}$$

$$-3 < x$$

Rewrite:

$$x > -3$$



Ex:

$$-\frac{2}{3}x \leq \frac{4}{5}$$

$$-\frac{3}{2} \left(-\frac{2}{3}x \right) \geq \left(\frac{4}{5} \right) \left(-\frac{3}{2} \right)$$

$$x \geq -\frac{12}{6}$$

$$x \geq -\frac{6}{5}$$

$$x \geq -1\frac{1}{5}$$

