

Math 7 - Unit 2c

Day 5 - Solving MORE Inequalities by Multiplying or Dividing

Lesson Objectives:

- I can solve one-step inequalities by multiplying.
- I can solve one-step inequalities by dividing.
- I know how to show work when solving inequalities.

Complete the table by substituting the given values into the product. Then rewrite the inequality with the new product. Determine if the product makes the inequality TRUE or FALSE. Finally graph the solution of the inequality.

$\frac{2x}{2} \leq \frac{4}{2}$
 $x \leq 2$

x	2x	Rewrite Inequality	TRUE or FALSE
-1	-2	$-2 \leq 4$	TRUE
0	0	$0 \leq 4$	True
1	2	$2 \leq 4$	True
2	4	$4 \leq 4$	True
3	6	$6 \leq 4$	False
4	8	$8 \leq 4$	False



What is the solution for $2x \leq 4$?

Is this what you expected?

$x \leq 2$

Complete the table by substituting the given values into the product. Then rewrite the inequality with the new product. Determine if the product makes the inequality TRUE or FALSE. Finally graph the solution of the inequality.

$-2x \leq 4$

x	-2x	Rewrite Inequality	TRUE or FALSE
1	-2	$-2 \leq 4$	TRUE
0	0	$0 \leq 4$	True
-1	2	$2 \leq 4$	True
-2	4	$4 \leq 4$	True
-3	6	$6 \leq 4$	False
-4	8	$8 \leq 4$	False

$x \geq -2$



What is the solution for $-2x \leq 4$?

Is this what you expected?

$x \geq -2$

When you divide each side of an inequality by the same negative number, the inequality symbol must be reversed for the inequality to remain true.

Division Property of Inequality: You can divide the same number from both sides of an inequality, and the statement will remain true.

For all numbers a, b, and c, where $c < 0$

If $a < b$ or $a > b$ and $c \neq 0$, then $a \div c > b \div c$ or $a \div c < b \div c$.

These properties are also true from $a \leq b$ and $a \geq b$.

Complete the table by substituting the given values into the product. Then rewrite the inequality with the new product. Determine if the product makes the inequality TRUE or FALSE. Finally graph the solution of the inequality.

$\frac{x}{2} \leq 2$

x	$\frac{x}{2}$	Rewrite Inequality	TRUE or FALSE
-2	-1	$-1 \leq 2$	True
0	0	$0 \leq 2$	True
2	1	$1 \leq 2$	True
4	2	$2 \leq 2$	True
6	3	$3 \leq 2$	False

$x \leq 4$



What is the solution for $x/2 \leq 2$?

Is this what you expected?

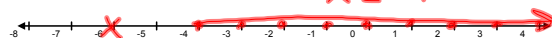
$\frac{x}{2} \leq 2$
 $x \leq 4$

Complete the table by substituting the given values into the product. Then rewrite the inequality with the new product. Determine if the product makes the inequality TRUE or FALSE. Finally graph the solution of the inequality.

$\frac{x}{-2} \leq 2$

x	$\frac{x}{-2}$	Rewrite Inequality	TRUE or FALSE
-6	3	$3 \leq 2$	False
-4	2	$2 \leq 2$	True
-2	1	$1 \leq 2$	True
0	0	$0 \leq 2$	True
2	-1	$-1 \leq 2$	True

$x \geq -4$



What is the solution for $x/(-2) \leq 2$?

Is this what you expected?

$\frac{x}{-2} \leq 2$
 $x \geq -4$

When you multiply each side of an inequality by the same negative number, the inequality symbol must be reversed for the inequality to remain true.

Multiplication Property of Inequality: You can multiply the same number to both sides of an inequality, and the statement will remain true.

For all numbers a , b , and c , where $c < 0$,
if $a < b$ or $a > b$, then $ac > bc$ or $ac < bc$.

These properties are also true from $a \leq b$ and $a \geq b$.

Solve each inequality. Don't forget to show work, give properties as reasons, and graph your solution on a number line.

1. $-9x \leq 54$
 $\frac{-9x}{-9} \leq \frac{54}{-9}$ Division Prop (\neq)
 $x \geq -6$

2. $\frac{d}{-9} > 4$
 $\frac{d}{-9} > 4$ Division Prop (\neq)
 $d < -36$

Solve each inequality. Don't forget to show work, give properties as reasons, and graph your solution on a number line.

3. $\frac{n}{5} \leq -0.8$ Multiplication Prop (#)
 $n \leq -4$

4. $\frac{-0.6n}{-0.6} \geq 0.48$ Division Prop (#)
 $n \geq -0.8$

Solve each inequality. Don't forget to show work, give properties as reasons, and graph your solution on a number line.

5. $-\frac{2x}{3} \geq 7$

~~$-\frac{2x}{3} \geq 7 \cdot 3$ Multiplikan Prop (x)~~

~~$-\frac{2x}{3} \geq \frac{21}{3}$ Divisin Prop (x)~~

~~$x \leq -10\frac{1}{2}$~~



6. $-\frac{7}{9}k > -\frac{5}{12}$

~~$\frac{9}{9} \cdot -\frac{7}{9}k > \frac{-5}{12} \cdot \frac{9}{9}$~~

~~Multiplikan Prop (x)~~

$K = \frac{-45}{-84}$

$K < \frac{15}{28}$



Homework

Solving MORE Inequalities by Multiplying & Dividing WKS

* Individual Think Time *



What to do if you get stuck...

1. Reread the problem. Did you write it down correctly?
2. Reread your notes. Is there a problem similar that we did together in class?
3. Find a problem similar in your book. Try this one to see if it helps.
4. Skip the problem until the end of Individual Think Time. Then ask an "educated" question of a neighbor or Mrs. Call.

Today we're working by...

