

# Concept 11: Writing & Graphing Inequalities

**DUE DATE:** Friday, Jan 17<sup>th</sup>  
*(initial score in the gradebook)*  
**DEADLINE:** Friday, Jan 24<sup>th</sup>  
*(no more class time to work on this concept)*

**Pre-Quiz Score =** \_\_\_\_/5  
**Score 5 = Level 4**  
**Score 3,4 = Level 3**  
**Score 0,1,2 = Level 2**

## (C) Level 2

1. Watch the video (Level 2: Write Linear Equations)

Complete the Notes & Basic Practice

Check the Key and Correct Mistakes

2. Complete 2 of the following tasks

IXL Practice	Worksheets	Creating
<b>K1, K2</b> (Alg 1) (at least to 85)  Score = _____	Level 2: Writing Inequalities	Poster about how to graph inequalities on a number line

3. Take the Schoology Quiz ()

Score of 4 or higher move to level 3

Score of 3 or less, complete 1 of the following tasks

Level 2 Quiz Score:
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BuzzMath	Fix Mistakes	Alternate Option
Complete this task in BuzzMath	Write up the questions you got wrong and hand it in. All work and steps must be shown.	Choose the option for Step 2 that you haven't completed yet

Mr. Sieling's Signature \_\_\_\_\_

### (B) Level 3

1. Watch the video (Level 3: Writing & Graphing Inequalities)  
Complete the Notes & Basic Practice, Check the Key and Correct Mistakes
2. Complete 2 of the following tasks

IXL Practice	Worksheets	Creating
<b>T3</b> (Alg 1) (at least to 90)  Score = _____	Level 3: Graphing Linear Inequalities	Create a short video tutorial about how to graph a linear inequality

3. Take the Schoology Quiz ()  
Score of 4 or higher move to level 4  
Score of 3 or less, complete 1 of the following tasks

Level 3  
Quiz Score:

BuzzMath	Fix Mistakes	Alternate Option
Complete this task in BuzzMath	Write up the questions you got wrong and hand it in. All work and steps must be shown.	Choose the option for Step 2 that you haven't completed yet

Mr. Sieling's Signature: \_\_\_\_\_

### (A) Level 4

1. Watch the video (Level 4: Writing & Graphing Inequalities )  
Complete the Notes & Basic Practice, Check the Key and Correct Mistakes
2. Complete 2 of the following tasks

IXL Practice	Worksheets	Creating
<b>T4</b> (Alg 1) (at least to 90)  Score = _____	Level 4: Writing Linear Inequalities	

3. Take the Schoology Quiz ()  
Score of 4 or higher, Congratulations Math Master!  
Score of 3 or less, complete 1 of the following tasks

Level 4  
Quiz Score:

BuzzMath	Fix Mistakes	Alternate Option
Complete this task in BuzzMath	Write up the questions you got wrong and hand it in. All work and steps must be shown.	Choose the option for Step 2 that you haven't completed yet

Mr. Sieling's Signature: \_\_\_\_\_

# Notes Level 2:

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**Goals:**

**Write linear inequalities from a number line**

**Graph linear inequalities on a number line**

Concept # \_\_\_\_\_

**Notes:**

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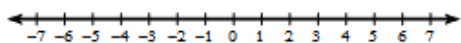
Big Ideas

Examples/Details

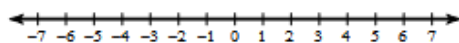
## Level 2 Practice:

Draw a graph for each inequality.

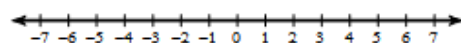
1)  $n > 1$



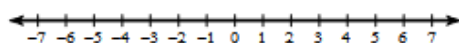
2)  $r > 4$



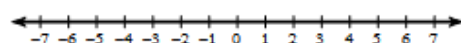
3)  $n \leq -3$



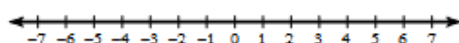
4)  $n \geq -3$



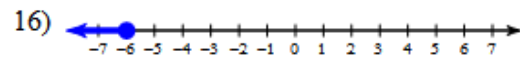
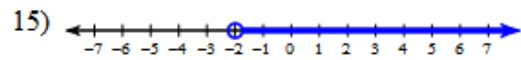
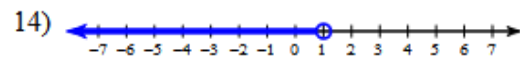
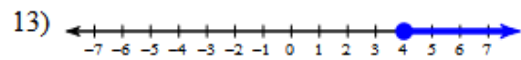
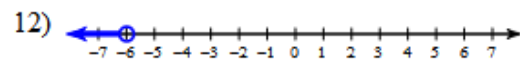
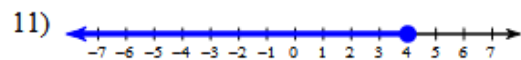
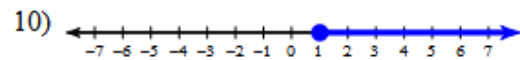
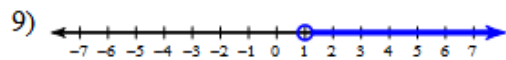
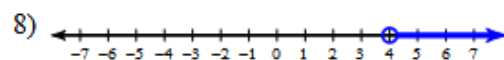
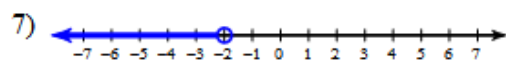
5)  $x \leq -6$



6)  $p \geq -6$



Write an inequality for each graph.



# Worksheet Level 2:

## Goals:

Write linear inequalities from a number line

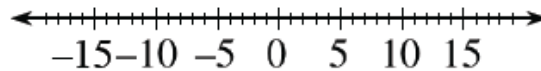
Graph linear inequalities on a number line

Concept # \_\_\_\_\_

## Practice #1

Use the number line to help compare each pair of numbers.

Insert a  $<$  or  $>$  into each blank.



a.  $-5 \underline{\quad} -2$

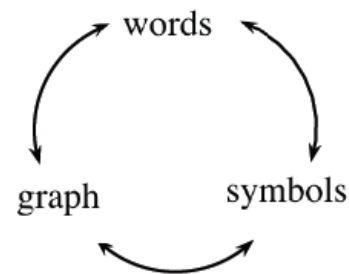
b.  $8 \underline{\quad} -1$

c.  $-5 \underline{\quad} 0$

d.  $-15 \underline{\quad} -14$

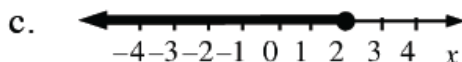
## Practice #2

The diagram at right shows three possible ways to represent inequality statements. Review the meanings of the inequality symbols  $>$ ,  $<$ ,  $\geq$ , and  $\leq$  with your team. Then, generate the two missing representations from each inequality described in parts (a) through (c) below.



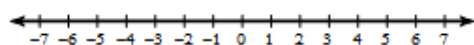
a.  $x < -1\frac{1}{2}$

b.  $x$  is greater than or equal to two.

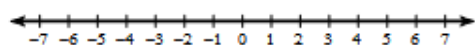


**Practice #3****Draw a graph for each inequality.**

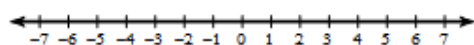
1)  $r \geq -6$



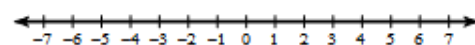
2)  $-2 \leq x$



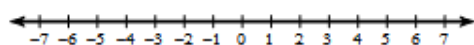
3)  $-5 < v$



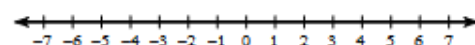
4)  $v < 4$



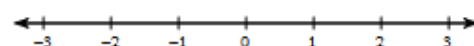
5)  $n \geq -2$



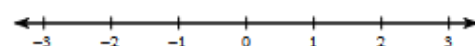
6)  $n < 1$



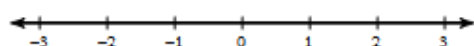
7)  $a < 1\frac{1}{2}$



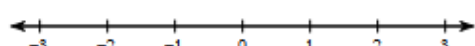
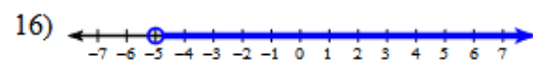
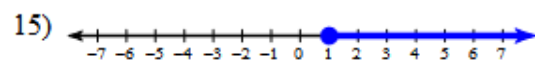
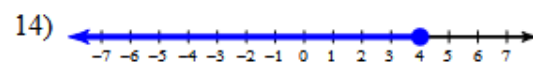
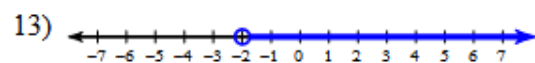
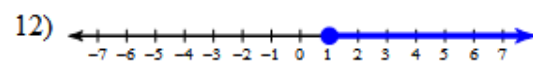
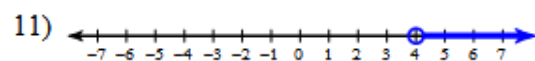
8)  $\frac{3}{2} > p$



9)  $1 \leq m$



10)  $x > \frac{1}{2}$

**Write an inequality for each graph.**

# Notes Level 3:

**Goals:**

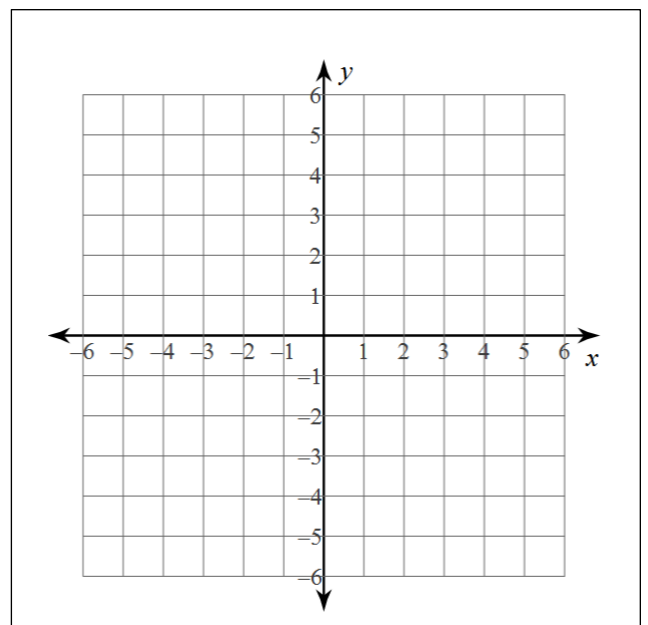
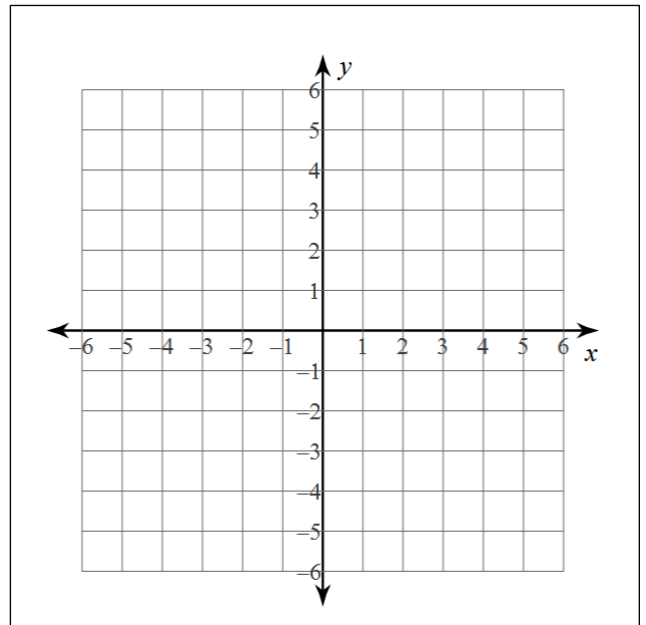
Graph a linear inequality on a coordinate graph

Concept # \_\_\_\_\_

**Notes:**

Big Ideas

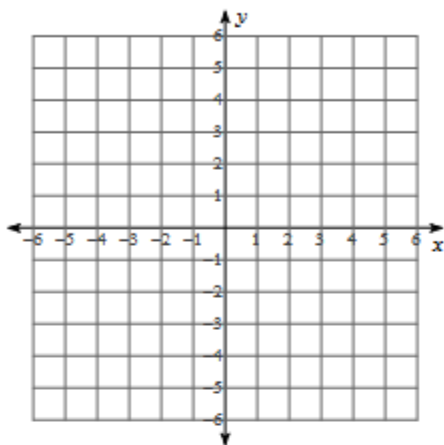
Examples/Details



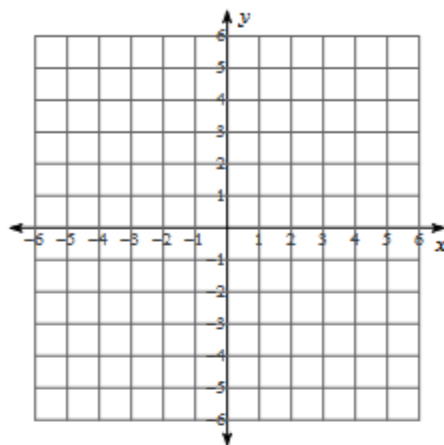
Level 3 Practice:

Sketch the graph of each linear inequality.

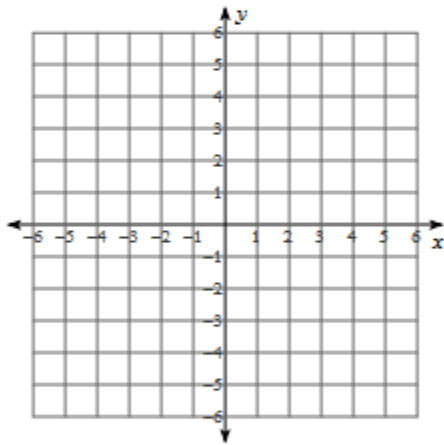
1)  $y > -\frac{1}{2}x - 4$



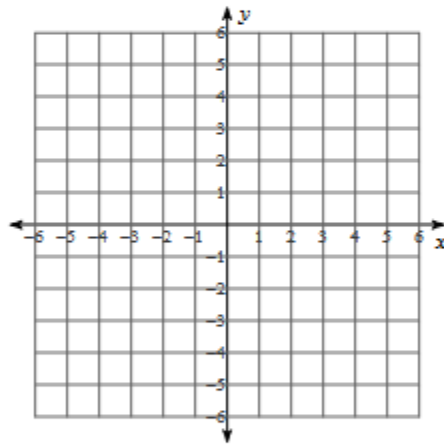
2)  $y \geq -\frac{1}{3}x + 5$



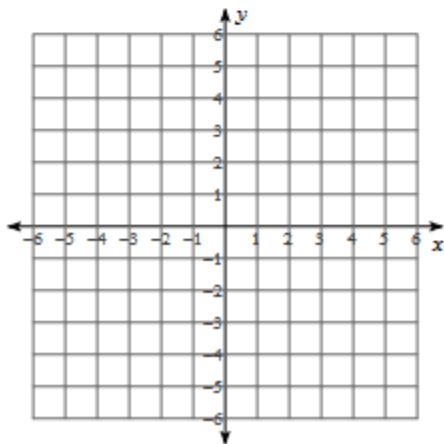
3)  $y < -3x + 5$



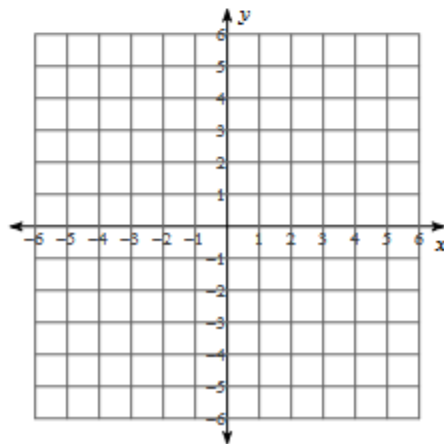
4)  $y < 2x + 3$



5)  $5x + y < 4$



6)  $4x + y \leq 3$





# Worksheet Level 3:

## Goals:

Graph a linear inequality on a coordinate graph

Concept # \_\_\_\_\_

## Practice #1

### Section 1: Checking Solutions of Inequalities

1) Check whether the ordered pairs are solutions of:  
 $x - 4y < 1$

a.) (5, 1)

b.) (0, 0)

Answer: a.)

b.)

YT 1) Check whether the ordered pairs are solutions of:  $4x + 5y \leq 12$

a.) (-3, 5)

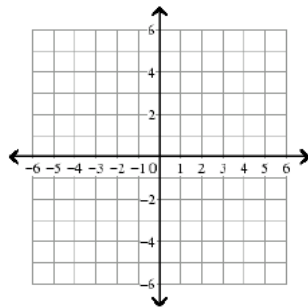
b.) (6, -8)

Answer: a.)

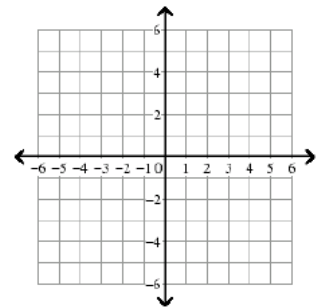
b.)

### Section 2: Graphing Linear Inequalities that are Horizontal

2) Graph:  $y > -3$

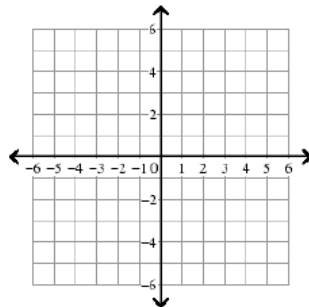


YT 2) Graph:  $y \leq 1$



### Section 3: Graphing Linear Inequalities in Two Variables

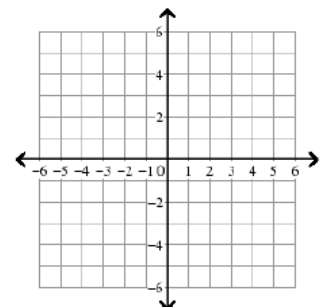
3) Graph:  $y < x$



$m =$  \_\_\_\_\_

$b =$  \_\_\_\_\_

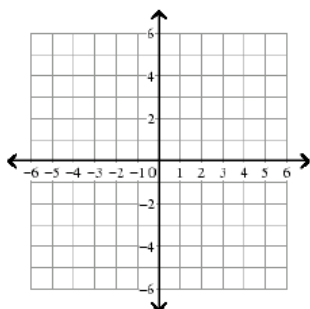
YT 3) Graph:  $y \geq -x$



$m =$  \_\_\_\_\_

$b =$  \_\_\_\_\_

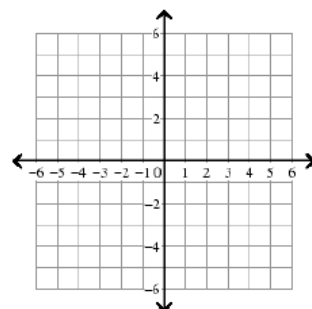
4) Graph:  $y \geq \frac{1}{2}x - 3$



$m = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

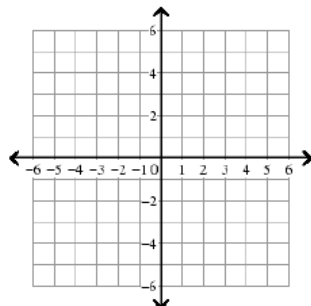
YT 4) Graph:  $y > \frac{2}{3}x - 5$



$m = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

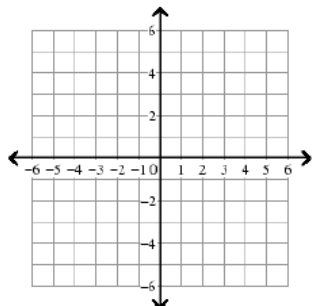
5) Graph:  $x - y \leq 2$



$m = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

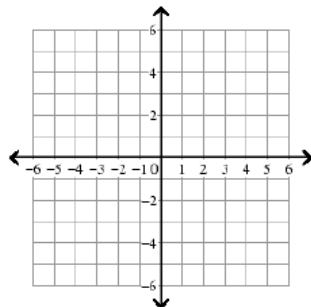
YT 5) Graph:  $-y + x > -2$



$m = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

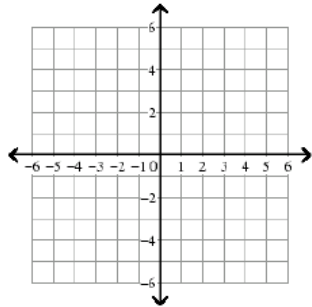
6) Graph:  $2y + 2x \leq 4$



$m = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

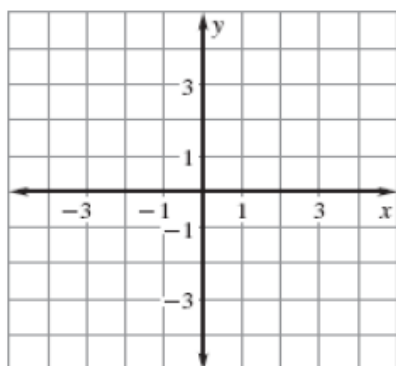
YT 6) Graph:  $2y - x < -4$



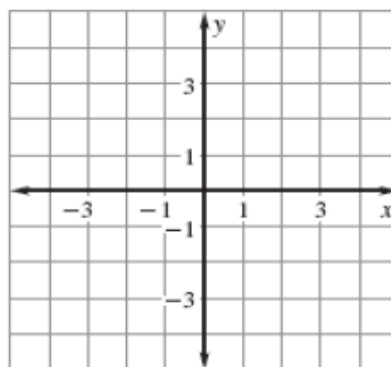
$m = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

7.)  $3x - 3y \leq 3$



8.)  $y - x < 3$



# Notes Level 4:

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**Goals:**

**Write a linear inequality from a word problem**

**Graph a linear inequality in two variables**

Concept # \_\_\_\_\_

**Notes:**

Big Ideas

Examples/Details

**Basic Practice:**

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Write a linear inequality for each situation.

Mr. Crawford is ordering pizzas and breadsticks for a school pizza party and has a budget of \$81, but no more. An order of breadsticks costs \$7 and a pepperoni pizza costs \$13.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of orders of breadsticks  
 $y$  = the number of pepperoni pizzas

The Springtown High School science department can spend no more than \$2,700 on textbooks this year. The department needs to buy both Biology textbooks, which cost \$57 apiece, and Chemistry textbooks, which cost \$72 apiece.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of Biology textbooks  
 $y$  = the number of Chemistry textbooks

A landscaping business is purchasing plants from a nursery to finish a project. It will cost \$14 each to buy each tree and \$5 each to buy each bush. The landscaper wishes to keep the spending under \$1,000.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of trees  
 $y$  = the number of bushes

In order to raise money to attend upcoming competitions, the debate team at Arlington High School is selling apple cider and hot chocolate at a basketball game. They hope to make at least \$240 in revenue at tonight's game, with hot chocolate selling for \$1 and hot apple cider selling for \$2.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of hot chocolates sold  
 $y$  = the number of apple ciders sold

# Worksheet Level 4:

## Goals:

Write a linear inequality from a word problem

Graph a linear inequality in two variables

Concept # \_\_\_\_\_

## Practice #1

Each country is being asked to donate food packages and medicine packages.

Each country sent a summary from their budget committee. (see below)

For each country, write a linear inequality and graph it using [www.desmos.com](http://www.desmos.com)

Use the graph to decide on the number of food packages and medicine packages that each country should give.

(all countries should give the same amount each)

Country A	Country B	Country C
<p><b>Memo from your country's Budget Committee:</b></p> <p><i>Because we are spending so much money on improving our hospitals right now, our funds are very limited. We are constrained to spending <b>up to, but not more than</b> \$300,000. Each food package will cost our country \$900, and each medicine package will cost \$600.</i></p>	<p><b>Memo from your country's Budget Committee:</b></p> <p><i>Because we are spending so much money on improving our schools right now, our funds are very limited. We are constrained to must spending <b>no more than</b> \$600,000 total. Each food package will cost our country \$500, and each medicine package will cost \$2000.</i></p>	<p><b>Memo from your country's Budget Committee:</b></p> <p><i>Since our country is doing so well financially, our citizens voted that we must spend <b>more than</b> \$540,000 in aid to other countries. Each food package will cost our country \$2000, and each medicine package will cost \$3000.</i></p>

Inequality: \_\_\_\_\_

Inequality: \_\_\_\_\_

Inequality: \_\_\_\_\_

Country D	Country E	Special Assignment
<p><b>Memo from your country's Budget Committee:</b></p> <p><i>Since our country is doing so well financially, our citizens voted that we must spend <b>more than</b> \$900,000 in aid to other countries. Each food package will cost our country \$5000. Each medicine package will cost \$2000.</i></p>	<p><b>Memo from your country's Budget Committee:</b></p> <p><i>Luckily, our country has many medical supplies, so there is no limit to the number of medicine packets we can offer. However, due to the farming restrictions in our country, we are constrained to donating <b>fewer than</b> 250 food packages in order to feed our own people.</i></p>	<p><b>A special note from the Secretary General:</b></p> <p><i>Since your country is a member of the Emergency Fund Committee, I have a special job for you.</i></p> <p><i>We are expecting food shortages in the near future because of the severe drought in Sudan. Each country must give <b>at least</b> 100 food packages.</i></p>

Inequality: \_\_\_\_\_

Inequality: \_\_\_\_\_

Inequality: \_\_\_\_\_

Each Country should donate \_\_\_\_\_ food packages and \_\_\_\_\_ medicine packages.

## Practice #2

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Write an inequality for each problem below.

Mrs. Quinn is making her special cantaloupe-and-honeydew salad for a school banquet and doesn't want to spend more than \$30 at the supermarket. Currently, cantaloupes cost \$3 each and honeydew melons cost \$2 each.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of cantaloupes she will purchase

$y$  = the number of honeydew melons she will purchase

During a special sale, all video games cost \$26 and all movies cost \$14. Derrick plans to spend some or all of his \$220 in birthday money on these movies and video games.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of video games Derrick can buy

$y$  = the number of movies Derrick can buy

The manager of an electronics store projects that the store should achieve more than \$21,000 in revenue from TVs and DVD players every day in order to remain profitable. Its DVD players sell for \$380, and TVs sell for \$530.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of DVD players sold

$y$  = the number of TVs sold

Allie is using ribbon to create girls' hair barrettes. She has a total of 64 yards of ribbon with which to make her creations. A regular barrette requires 1 yard of ribbon and a deluxe barrette uses 4 yards of ribbon.

Select the inequality in standard form that describes this situation. Use the given numbers and the following variables.

$x$  = the number of regular barrettes Allie can make

$y$  = the number of deluxe barrettes Allie can make