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## Warmup 10/(-8 - (-28))

- Solve the inequality. Then graph the solution.

$$-5(x - 6) \leq 3x + 9 - x$$

## Solving Linear Inequalities

### Objective:

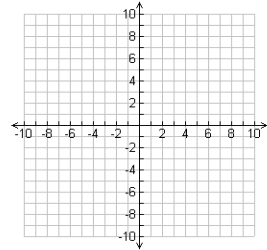
- Use graphing to solve linear inequalities in two variables

## Tips

- $\leq$  or  $\geq$ : Solid line
- $<$  or  $>$ : Dotted line
- $y <$  or  $y \leq$ : Shade below
- $y >$  or  $y \geq$ : Shade above
- YOU MUST SOLVE FOR Y BEFORE SHADING!!!!!!**
- HELPFUL HINT:**
  - Check your answer by substituting an easy point like (0, 0)

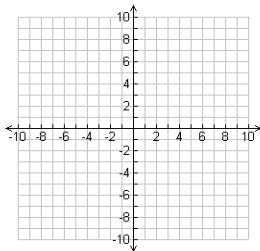
- Graph the inequality:

$$3x + 2y > 6$$



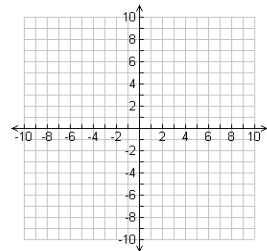
- Graph the inequality:

$$10 - 2y \geq 6x$$



- Graph the inequality:

$$y < 7$$



Graph the inequality:  
 $x \geq -3$

### Horizontal & Vertical Lines

- $y = \text{number}$ : horizontal
- $x = \text{number}$ : vertical

Write an inequality to represent the graph.

y-intercept: 1; slope:  $\frac{3}{4}$

Write an equation in slope-intercept form.

$$y = mx + b \rightarrow y = \frac{3}{4}x + 1$$

The graph is shaded *above* a *dashed* boundary line.

Replace = with > to write the inequality  $y > \frac{3}{4}x + 1$ .

Write an inequality to represent the graph.

y-intercept: -5 slope:  $-\frac{1}{2}$

Write an equation in slope-intercept form.

$$y = mx + b \rightarrow y = -\frac{1}{2}x - 5$$

The graph is shaded *below* a *solid* boundary line.

Replace = with  $\leq$  to write the inequality  $y \leq -\frac{1}{2}x - 5$ .

Ada has at most 120 beads to make jewelry. A necklace requires 40 beads, and a bracelet requires 15 beads.

Write a linear inequality to describe the situation.

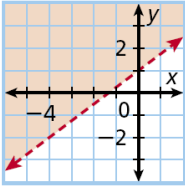
Let  $x$  represent the number of necklaces and  $y$  the number of bracelets.

Write an inequality. Use  $\leq$  for "at most."

Graph the solutions.

Shade below the line. Ada can only make whole numbers of jewelry. All points on or below the line with whole number coordinates are the different combinations of bracelets and necklaces that Ada can make.

Write an inequality to represent the graph.



y-intercept: 1; slope:  $\frac{3}{4}$

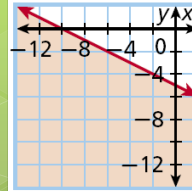
Write an equation in slope-intercept form.

$$y = mx + b \rightarrow y = \frac{3}{4}x + 1$$

The graph is shaded *above* a *dashed* boundary line.

Replace = with > to write the inequality  $y > \frac{3}{4}x + 1$ .

Write an inequality to represent the graph.



y-intercept: -5 slope:  $-\frac{1}{2}$

Write an equation in slope-intercept form.

$$y = mx + b \rightarrow y = -\frac{1}{2}x - 5$$

The graph is shaded *below* a *solid* boundary line.

Replace = with  $\leq$  to write the inequality  $y \leq -\frac{1}{2}x - 5$ .

Homework/Classwork

Tonight's homework...