

UNIT 2 LESSON 5 – GRAPHING LINEAR INEQUALITIES

Solving linear inequalities is just like solving linear equations.

THE EQUATION NEEDS TO BE IN “Y = MX + B” FORMAT

(but we will use the inequality symbols)

> Greater than

< Less than

≥ Greater than or equal to

≤ Less than or equal to

Rules for Graphing Linear Inequalities

If < OR > Boundary line will be a dashed line - - - - -

(means the line is not included in the solution)

If ≤ OR ≥ Boundary line will be a solid line - - - - -

(means the line is included in the solution)

If > OR ≥ Shade the region above the boundary line

If < OR ≤ Shade the region below the boundary line

*****CHECK YOUR GRAPH BY TESTING A POINT IN THE SOLUTION!!**

Example 1

Graph the solution to the following inequality. $y > x + 3$

Step 1) Is it in "y= mx + b" format?? **YES**

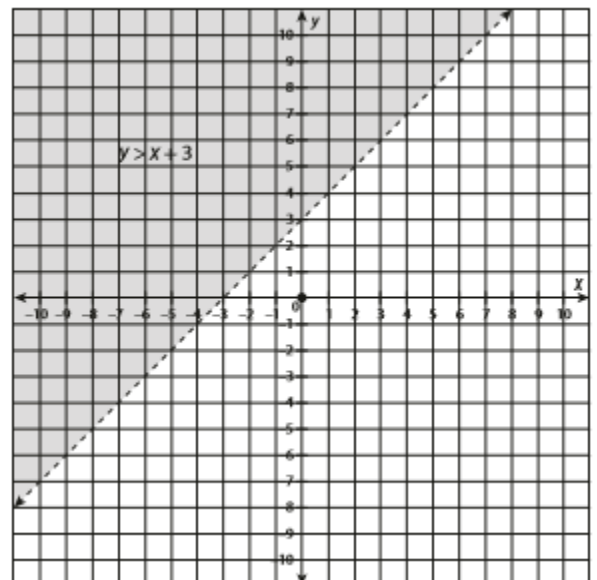
Step 2) Graph the line **use the y-intercept and slope to graph line**

Step 3) Shade the solution region **the inequality symbol says that we Should draw a DASHED LINE and SHADE ABOVE THE BOUNDARY LINE**

Step 4) Test! **ALWAYS USE (0, 0) TO TEST**

$$y > x + 3 \longrightarrow 0 > 0 + 3 \longrightarrow 0 > 3 ??$$

FALSE so the graph drawn is correct.



Example 2

Graph the solution to the following inequality. $\frac{y}{2} - 2 \leq x$

Step 1) Is it in "y= mx + b" format?? **NO** – we need to solve for y
 $y \leq 2x + 4$

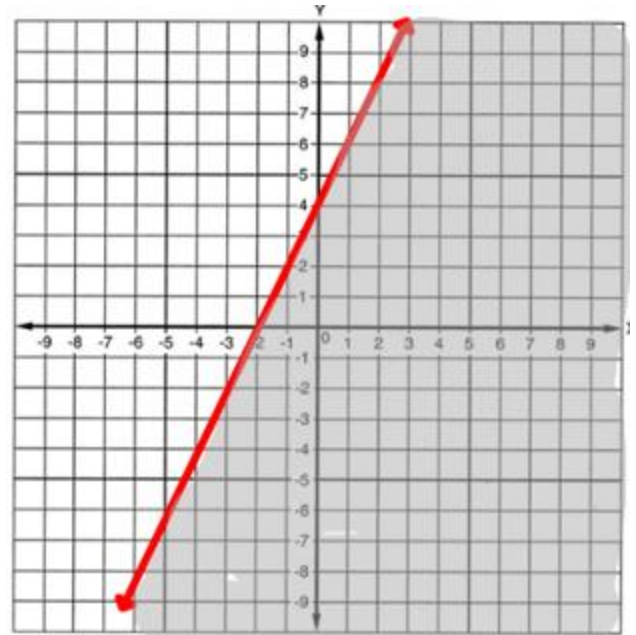
Step 2) Graph the line use the y-intercept and slope to graph line

Step 3) Shade the solution region the inequality symbol says that we should draw a **SOLID LINE** and **SHADE BELOW THE BOUNDARY LINE**

Step 4) Test! **ALWAYS USE (0, 0) TO TEST**

$$y \leq 2x + 4 \longrightarrow 0 \leq 2(0) + 4 \longrightarrow 0 \leq 4 ??$$

TRUE so the graph drawn is correct.



Example 3

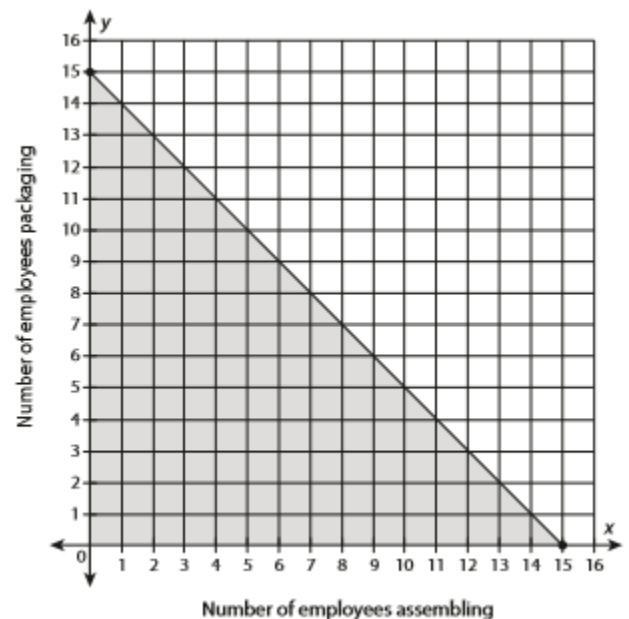
A company that manufactures MP3 players needs to hire more workers to keep up with an increase in orders. Some workers will be assembling the players, and others will be packaging them. The company can hire no more than 15 new employees. Write and graph an inequality that represents the number of new workers who can be hired.

1) Write an inequality using symbols from the context.

$$x + y \leq 15$$

2) Graph the linear equation that represents the boundary line

Inequality symbol says that the boundary line will be a solid line and the graph will be shaded below the line



YOU TRY!!!

Example 4) Graph the solution to the following inequality. $y \geq -3x + 4$

Example 5) Graph the solution to the following inequality. $3x - 2y < 10$