**Linear Inequalities**

* For one-variable inequalities (for example: ***x < 2***), the solution consisted of a bunch of *possible* values for the variable.
* For two-variable inequalities (for example: ***2x + y < 0***), the solution consists of a bunch of *possible* *points* for the two variables (usually ***x*** and ***y***).
* Before we look at graphing these inequalities, let’s try some more two-variable inequalities:

**Examples:**

1. Determine 2 points that satisfy and 2 points that do not satisfy ***x ≥ 2 + y***.
2. Does the point (2, 3) satisfy the inequality ***x – 4y ≤ -10***? What about ***x – 4y < -10***?

**Graphing Linear Inequalities**

* For one-variable inequalities (for example: ***x < 2***), the graph of the solution consisted of a one-dimensional number line. The solution was usually an infinitely long line with infinite numbers.
* For two-variable inequalities (for example: ***2x + y < 0***), the graph of the solution will (usually) consist of an infinitely large area, consisting of an infinite number of possible points.
* Steps for graphing an inequality.
  1. Change the inequality sign to an equal sign.
  2. Rearrange until the graph is in ***y = mx + b*** form.
  3. Graph the line. If the inequality was
     + ***<*** or ***>*** … use a dashed line … ---------------------
     + ***≤*** or ***≥*** … use a solid line …
  4. Test a point above or below the line in the originial inequality.
     + If a point above satisfies the inequality, shade above the line.
     + If a point below satisfies the inequality, shade below the line.
     + If both point satisfy the inequality … you messed up!

**Examples:** Graph the following inequalities:

1. y < x 2. x + y ≥ 2



1. 2x + 4y ≤ 16 4. x + ½y – 5 > 0



**Examples:** Graph the following inequalities:

1. y < 4 2. x ≥ 2



**Example:** What is the area of the triangle defined by the following inequalities: ***y < x + 2*** ***y > -4 x ≤ 3***?

