

# NOTES: GRAPHING LINEAR INEQUALITIES

Date: \_\_\_\_\_

CCSSM: A-REI.12 - Graphing linear inequalities on a coordinate plane

I can:

graph a linear inequality.

## Warm-Up

Identify the y-intercept and slope

1.  $y = \frac{2}{3}x - 4$

$m = \frac{2}{3}$

$b = (0, -4)$

2.  $y = -x + 8$

$m = -1$

$b = (0, 8)$

3.  $y = -4x$

$m = -4$

$b = (0, 0)$

### What are linear inequalities?

A linear equation in which the equal sign has been replaced with an inequality symbol

There are 2 rules to help us graph linear inequalities ....

### What type of line do we make?

We make a .... Dashed Line

< or >

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each point on a dashed line is not a solution

We make a .... Solid Line

≤ or ≥

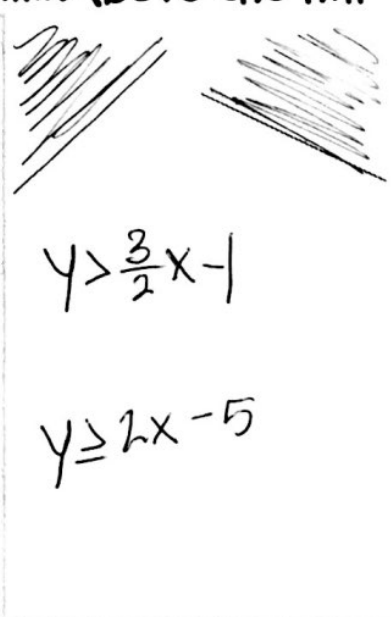
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each point on a solid line is a solution

# Where do we Shade?

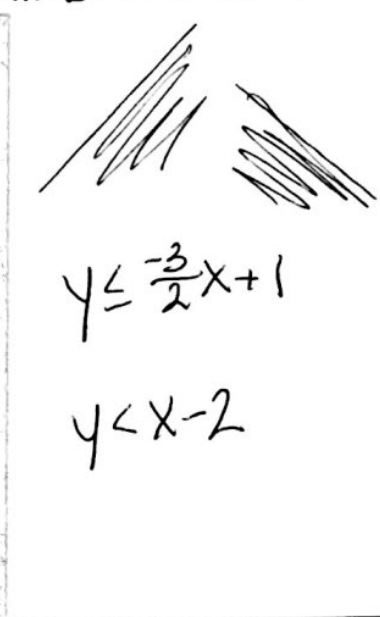
We shade ..... **Above the hill**

We shade .... **Below the hill**



$$y > \frac{3}{2}x - 1$$

$$y \geq 2x - 5$$



$$y \leq -\frac{3}{2}x + 1$$

$$y < x - 2$$

## Example 1

$$y > \frac{2}{3}x - 10$$

$$y \leq -2x + 4$$

$$y \geq x + 1$$

$$y < 4x + 1$$

Solid or Dashed

Solid or Dashed

Solid or Dashed

Solid or Dashed

Above

Above

Above

Above

Below

Below

Below

Below

Uphill or Down hill

Uphill or Down hill

Uphill or Down hill

Uphill or Down hill

Slope:  $\frac{2}{3}$

Slope:  $-2$

Slope:  $1$

Slope:  $4$

y-Intercept:  $(0, -10)$

y-Intercept:  $(0, 4)$

y-Intercept:  $(0, 1)$

y-Intercept:  $(0, 1)$

\* Solutions to <sup>linear</sup> inequalities are represented by coordinates

- there are an infinite number of solutions

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

$$y \leq -2x + 2$$

Dashed   Solid

Above   Below

Dashed   Solid

Above   Below

Slope (write both ways,  
WITH arrows):  $\frac{1 \uparrow}{2 \rightarrow}$  or  $\frac{-1 \downarrow}{-2 \leftarrow}$

y-intercept:  $(0, -4)$

Slope (write both ways,  
WITH arrows):  $\frac{-2 \downarrow}{1 \rightarrow}$  or  $\frac{2 \uparrow}{-1 \leftarrow}$

y-intercept:  $(0, 2)$

