## Unit 2 Lesson 21: Graphing Linear Inequalities in Two Variables (Part 1)

### 1 Math Talk: Less Than, Equal to, or More Than 12? (Warm up)

#### Student Task Statement

Here is an expression: $2x+3y$.

Decide if the values in each ordered pair, $(x,y)$, make the value of the expression less than, greater than, or equal to 12.

$(0,5)$

$(6,0)$

$(-1,-1)$

$(-5,10)$

### 2 Solutions and Not Solutions

#### Images for Launch





#### Student Task Statement

Here are four inequalities. Study each inequality assigned to your group and work with your group to:

* Find some coordinate pairs that represent solutions to the inequality and some coordinate pairs that do not represent solutions.
* Plot both sets of points. Either use two different colors or two different symbols like X and O.
* Plot enough points until you start to see the region that contains solutions and the region that contains non-solutions. Look for a pattern describing the region where solutions are plotted.

$x\geq y$



$-2y\geq -4$



$3x<0$



$x+y>10$



#### Activity Synthesis

$x\geq y$



$-2y\geq -4$



$3x<0$



$x+y>10$



### 3 Sketching Solutions to Inequalities

#### Images for Launch



#### Student Task Statement

1. Here is a graph that represents solutions to the equation $x−y=5$.
* 
* Sketch 4 quick graphs representing the solutions to each of these inequalities:
* $x−y<5$
* 
* $x−y\leq 5$
* 
* $x−y>5$
* 
* $x−y\geq 5$
* 
1. For each graph, write an inequality whose solutions are represented by the shaded part of the graph.
* A
* 
* B
* 
* C
* 
* D
* 



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