**Unit 6- Systems of Equations and Inequalities \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Lesson 9.1 Linear Inequalities in Two Variables**

Specific Outcome 7. Solve problems that involve linear and quadratic inequalities in two variables.

**Linear Inequalities can be represented in one of the following 4 forms:**

where *A*, *B*, and *C* are real numbers.

An inequality in the two variables *x* and *y* describes a region in

the Cartesian plane.

**Definitions:**

**Solution Set (**Solution region):

 : The line related to the liner equality \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , which

divides the Cartesian plane into \_\_\_\_\_ solution regions.

• may or may not be part of the solution region

• drawn as a solid line and included in the solution region if the inequality involves ≤ or ≥

• drawn as a dashed line and not included in the solution region if the inequality involves < or >

**Test Point:**



**Example 1:Graph a Linear Inequality of the Form *Ax* + *By* ≤ *C***

**a)** Graph 2*x* + 3*y* ≤ 6.

**b)** Determine if the point (**–**2, 4) is part of the solution.

**Method 1: Solve for y in terms of x**

**Method 2: Use the Intercepts**

**After graphing the boundary, select a test point form each region to determine which contains the solution:**

**b) Determine if the point (-2,4) is in the solution region.**



**Your Turn:**

1. Graph 4x +2y ≥ 10
2. Determine if the point (1,3) is part of the solution

**Example 2: Graph a Linear Inequality of the form Ax + By > C**

10x -5y >0



**Your Turn:**

**a)** Graph 5x – 20y < 0**.**

**Example 3:** **Write an Inequality Given its Graph**



**Your Turn:**

Write an inequality to represent the graph.



**Example 4: Write and Solve an Inequality**

Suppose that you are constructing a tabletop using aluminum and glass. The most that you can spend on materials is $50. Laminated safety glass costs $60/m2, and aluminum costs $1.75/ft. You can choose the dimensions of the table and the amount of each material used. Find all possible combinations of materials sufficient to make the tabletop.



**Your Turn:**

Use technology to find all possible combinations of tile and stone that can be used to make a mosaic. The tile costs $2.50/ft2, stone costs $6/kg, and the budget for the mosaic is $150.

Assignment :Pg's 472 #1a,b, 2b, 3 a,c,e, 4a, 5a, 8 a,c, 9, 11, 12, 15