Geometry HW October 22, 2013   Name_____

Shortest Distance Concepts   period   1 2 3 5 6

DIRECTIONS: Complete these questions on your own graph paper. Show all work that leads to your answers.

1. Graph the points: $A(4,6)$, $B(8,3)$, $C(1,-5)$ and $D(-12,5)$ on the coordinate grid.

  Your coordinate grid should allow for $X \in [-15,18]$ and $Y \in [-8,12]$.

   a. What is the distance point A is from the y-axis? Locate all lattice points that are on the y-axis and 5 units from point A.

   b. What is the distance point B is from the x-axis?. Locate all lattice points that are on the x-axis and 5 units from point B.

   c. What is the distance point C is from the x-axis? Locate all lattice points that are on the x-axis and 13 units from C.

   d. What is the distance point D is from the y-axis? Locate all lattice points that are on the y-axis and 13 units from D.

2. Given the coordinate points $P(-124,-37)$ and $Q(-20,56)$

   a. Write the general formula for <u>slope</u>. Write the numerical expression to find the <u>slope</u>. Simplify the slope value to a reduced fraction.

   b. Write the general formula for <u>distance</u>. Write the numerical expression to find the <u>distance</u>. Simplify the distance to a square root.

   c. Write the general formula for <u>midpoint</u>. Write the numerical expression to find the <u>midpoint</u>. Simplify the midpoint coordinate to reduced fractions or integers.

3. Show all of work to solve the system of equations using the elimination method:

$$-5x + 2y = 10$$
$$3x - 6y = -18$$

Concepts: slope, distance, midpoint formulas, solve system by elimination, shortest distance from point to line, equidistant points from point to line using Pythagorean theorem.