9.2

Name (print first and last) _____ **Per_____ Date:** 4/22 due 4/23

9.2 Locus: Fixed distance from a point **Geometry Regents 2013-2014 Ms. Lomac**

SLO: I can sketch a diagram of the set of all points (locus) that are a fixed distance from a common line.

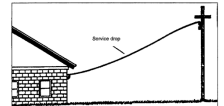(1) ☐ Use the vocabulary from lesson 9.1 as you work. **Locus, Fixed, Equidistant**

(2) ☐ **REALITY SKETCH: Locus -- Fixed distance from a line:** Ms. Lomac is doing yard work again. She wants to plant a tree and decides to plant the tree exactly 8 feet from the power line so that it will not grow up into the line. Draw a birds-eye view diagram that shows the power line and 20 places that she could plant the tree.

My Ideas   Class Ideas

(3) ☐ **NOTES: The locus of points that are a fixed distance from a line . . .** Diagram

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(4) ☐ **PRACTICE: Locus -- Fixed distance from a line**

☐ (a) What is the locus of all points in the plane 4 cm from a given line?
(1) a line perpendicular to the first
(2) two parallel lines 4 cm from either side of the first
(3) a parallel line 4 cm from the first
(4) a circle whose center is on the line

☐ (b) In the diagram below, town *C* lies on straight road *p*. Sketch the points that are 6 miles from town *C*. Then sketch the points that are 3 miles from road *p*. How many points satisfy both conditions?

p   C

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☐ (c) Before you continue, label each line on the graph with its equation.
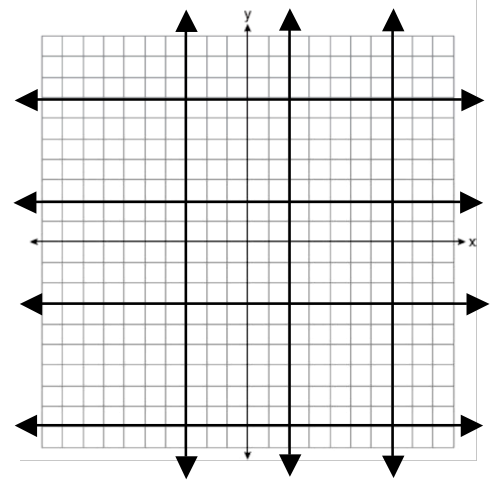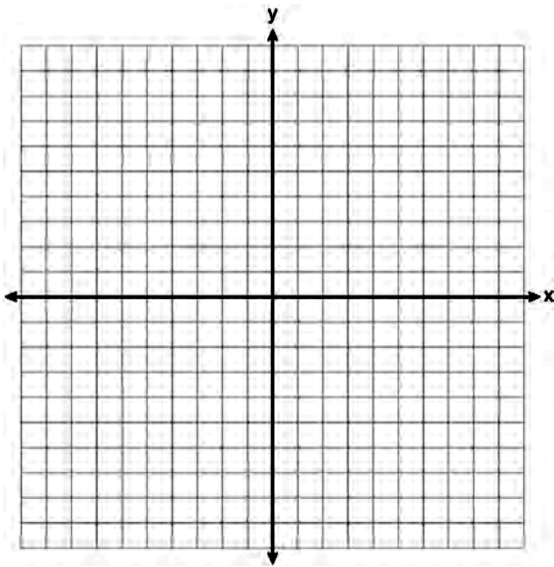Use the equations below:

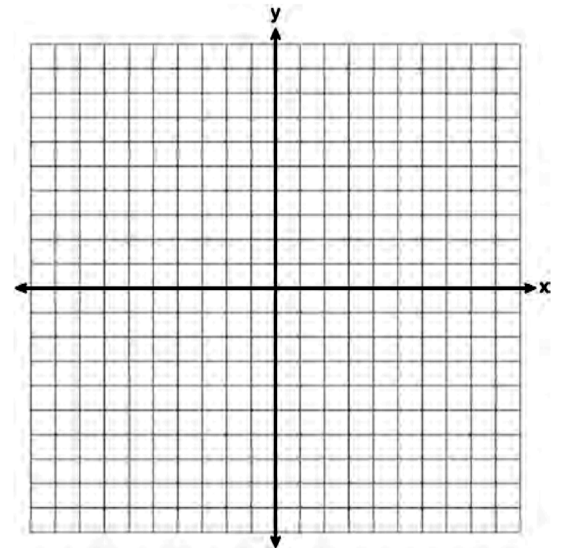$$y = -3$$
$$x = 7$$
$$y = 2$$
$$x = 2$$
$$y = -9$$

☐ (d) 110 On the set of axes below, sketch the points that are 5 units from the origin and sketch the points that are 2 units from the line $y = 3$. Label with an **X** all points that satisfy both conditions.

☐ (e) 112 On the set of axes below, graph the locus of points that are four units from the point (2, 1). On the same set of axes, graph the locus of points that are two units from the line $x = 4$. State the coordinates of all points that satisfy both conditions.

☐ (f) 114 How many points are both 4 units from the origin and also 2 units from the line $y = 4$?

1 1
2 2
3 3
4 4

☐ (g) 115 In a coordinate plane, how many points are both 5 units from the origin and 2 units from the x-axis?

1 1
2 2
3 3
4 4