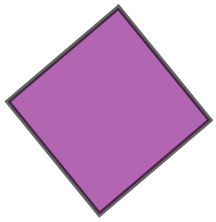
# AGENDA - Unit 9 -5

*Area and Perimeter of Coordinate Plane Figures*

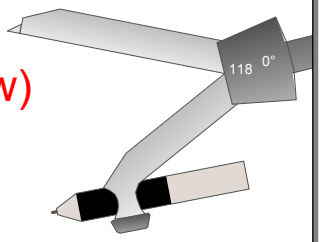


Go over HW 9.4

- Notes 9.5

HW - 9.5

- Text Book p. 609, 611 #6, 10, 13, 23
- p. 619, #6, (no 8) 7, 20, 25(new)

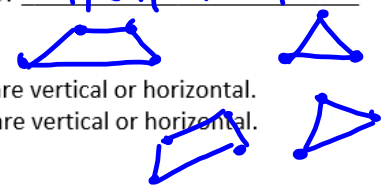



**GEOMETRY + LAB** **Name:** _____ **Section:** _____ **Date:** _____

9-5R & 9-7L Notes: Coordinate Plane Composite Figures

**Coordinate Plane Figures**

If we use a coordinate plane, what new first step would we need to take? GRAPH IT



**3 types of given information:**

1. Points that are vertices of a figure such that one or more sides are vertical or horizontal.
2. Points that are vertices of a figures such that none of the sides are vertical or horizontal.
3. Lines that intersect to enclose a figure.

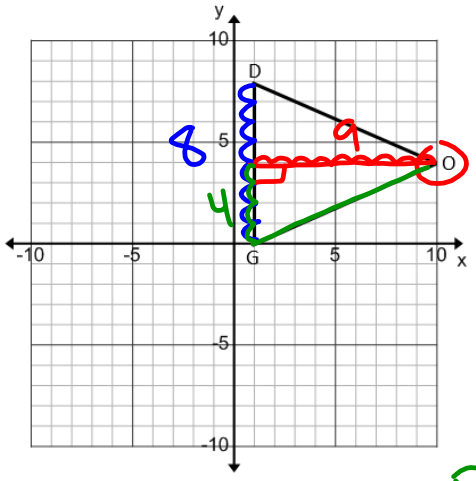


**Remember:**

- You can *only* count lengths that are HORIZ or VERTICAL in the coordinate plane. For all other lengths, you need to use the DISTANCE FORM. or PYTHAG THM.
- The base and height for any simple figure must be _____.
- The slopes of perpendicular lines/segments are OPPOSITE RECIPROCALS

**Case 1: – You are given points such that one or more sides is vertical or horizontal.**

Ex 1: Find the perimeter and area of ΔDOG with vertices D(1,8), O(10,4), G(1,0)




$A = \frac{bh}{2} = \frac{(8)(9)}{2} = 36$ UNITS$^2$

$P = DO + OG + GD$

$= \sqrt{97} + \sqrt{97} + 8$

$P = 2\sqrt{97} + 8$ UNITS.

DO: $4^2 + 9^2 = c^2$

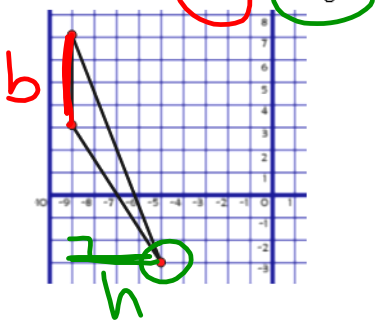
$16 + 81 = c^2$

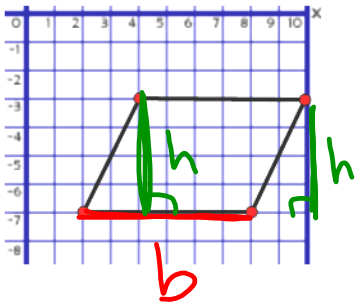
$97 = c^2$

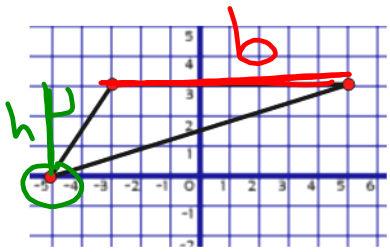
$c = \pm\sqrt{97}$

OG: $9^2 + 4^2 = c^2$

Ex 2: Draw in the base and height for each of the following triangles:

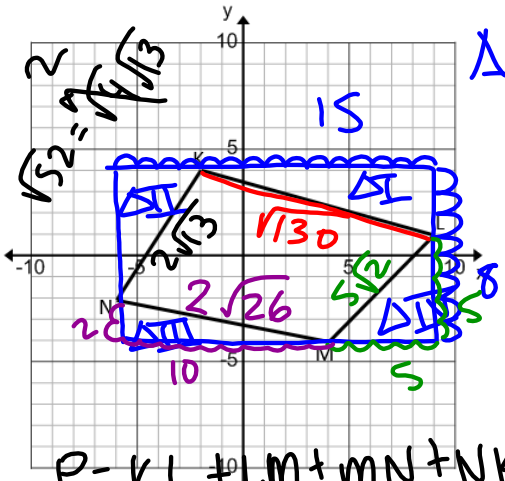


**Case 2:** You are given points such that none of the sides are vertical or horizontal **BOX METHOD**

Ex 1: Find the perimeter and area of the quadrilateral $KLMN$ $K(-2,4)$ $L(9,1)$ $M(4,-4)$ $N(-6,-2)$




$A_{KLMN} = A_{RECT} - \Delta I - \Delta II - \Delta III - \Delta IV$

$A_{RECT} = bh = (15)(8) = 120$

$A_{\Delta I} = \frac{bh}{2} = 16.5$ $A_{\Delta IV} = \frac{5 \cdot 5}{2} = 12.5$

$A_{\Delta II} = 12$

$A_{\Delta III} = 10$

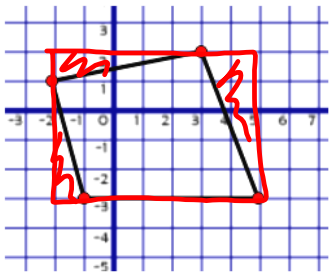
$A_{KLMN} = 120 - 16.5 - 12 - 10 - 12.5$

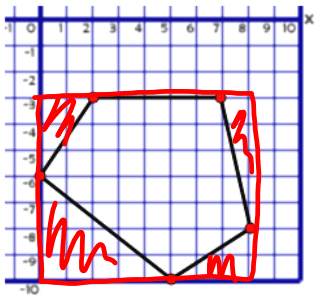
$A_{KLMN} = 69$ UNITS$^2$

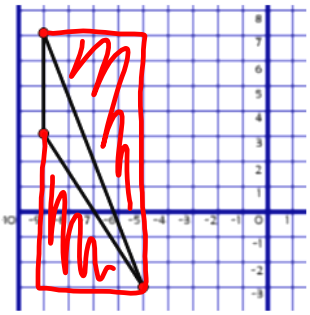
$P = KL + LM + MN + NK$

$P = \sqrt{130} + 5\sqrt{2} + 2\sqrt{26} + 2\sqrt{13}$ UNITS

Ex 2: Draw in the box for each of the following polygons:

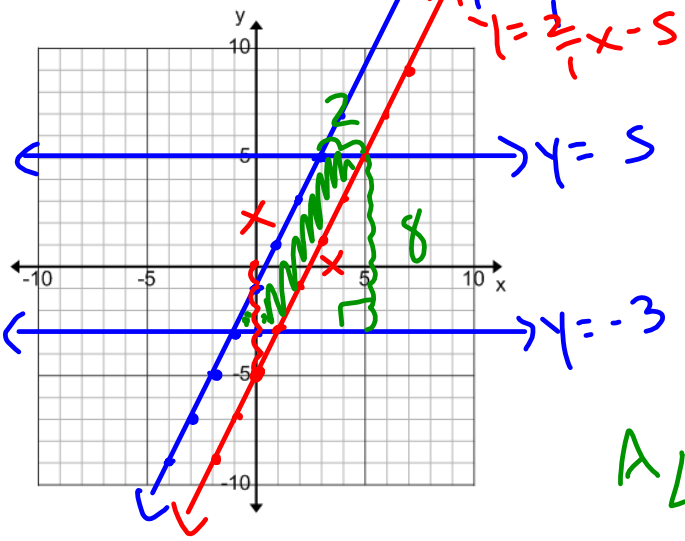






**Case 3: – You are given equations of lines that enclose a shape**

Find the perimeter and area of the shape bounded by $y = 5$, $y = -3$, $y = \frac{2}{1}x - 1$ and the dilation of the line $y = \frac{2}{1}x - 1$ by a scale factor of 5.




$y = \frac{2}{1}x - 1$ $y = mx + b$

$(0,-1)$ $m = \frac{2}{1}$

$m = \frac{2}{1}$ SLOPE PRES

$y = \frac{2}{1}x - 5$

$(0,-1) \rightarrow (0,-5)$

$A_{\square} = bh = (2)(8)$

$A_{\square} = 16$ UNITS$^2$

**Using Dimensions in the Coordinate Plane to Locate Vertices**

1) Which of the following could be the location of the other two vertices of parallelogram ABCD with an area of 20 units$^2$ given A(-2,1) and B(3,1)? Circle all which apply and state if any special parallelogram is formed.

a. C(-2,5) and D(3,5)

b. C(1,-3) and D(6,-3)

c. C(0,5) and D(3,5)

d. C(0,-3) and D(-5,-3)

$h = 4$ $s = 5$

$A = 20 = bh$

$20 = (5)h$

$4 = h$

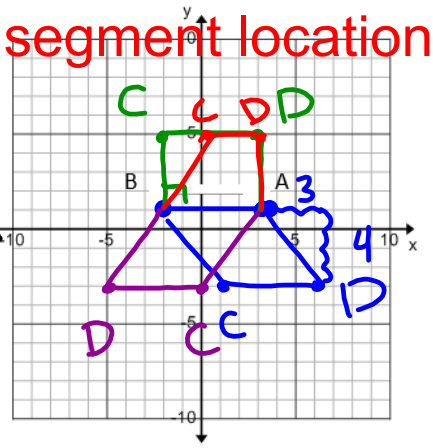
RECT

RHOMB ALL SIDES = 5

TRAP

$\square ABDC$

Note change in segment location



2) Given the area of triangle FGH is 20 units$^2$, determine three possible locations and state the coordinates for G with F(-2,1) and H(3,1).

G( 0, 9 )

G( -2, -7 )

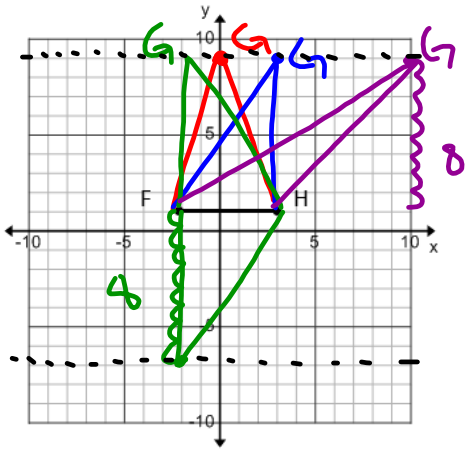
G( 3, 9 )

$A = \frac{bh}{2}$

$20 = \frac{5(h)}{2}$

$40 = 5h$

$8 = h$



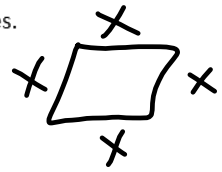

CONSEC.

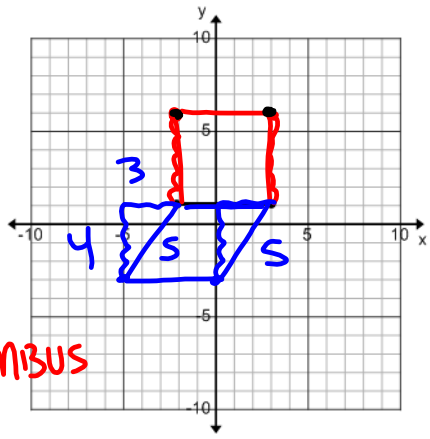
3) If the perimeter of a rhombus is 20 units and two vertices are located at (-2,1) and (3,1), determine two possible sets of coordinates for the other two vertices.

$P = 4x$

$20 = 4x$

$5 = x$




(-2, 6) and (3, 6) SQUARE IS A RHOMBUS

(-5, 3) and (0, -3) {3-4-5}