Geometry Nov 13, 2013 Name_____

Circles and Transformations period 1 2 3 5 6

Use the GGB File: "Distance Formula" to explore the following.

1. Place point A at the origin (0,0) and set the slider "lengthHypotenuse" to 10.
   Drag point B and notice how the yellow triangle changes locations.
   How many lattice point locations for point B exist that are 10 units from the origin._____
   List as many lattice point ordered pair coordinates for B as you can:

   _____

2. Notice point B has the coordinate (X, Y). Leave the hypotenuse length 10 for now.
   Click the check boxes "Change in X and Y" and "Distance" and "Pythagorean Theorem"
   With point A at the origin Distance from A(0, 0) to B(x, y):

   the change in Y is (Y - 0) $10=\sqrt{(x-0)^2+(y-0)^2}$

   the change in X is (X - 0). Pythagorean Theorem: $10^2=(x-0)^2+(y-0)^2$

   Move point A to the coordinate (6, 2). Distance from A(6,2) to B(x, y):
   State the change in X and Y from point B to A _____
   Change in X:_____ Pythagorean Theorem:
   Change in Y:_____ _____

   Move point A to the coordinate (-2, 4). Distance from A(-2, 4) to B(x, y):
   State the change in X and Y from point B to A _____
   Change in X:_____ Pythagorean Theorem:
   Change in Y:_____ _____

   Move point A to the coordinate (-8, -4). Distance from A(-8, -4) to B(x, y)
   State the change in X and Y from point B to A _____
   Change in X:_____ Pythagorean Theorem:
   Change in Y:_____ _____

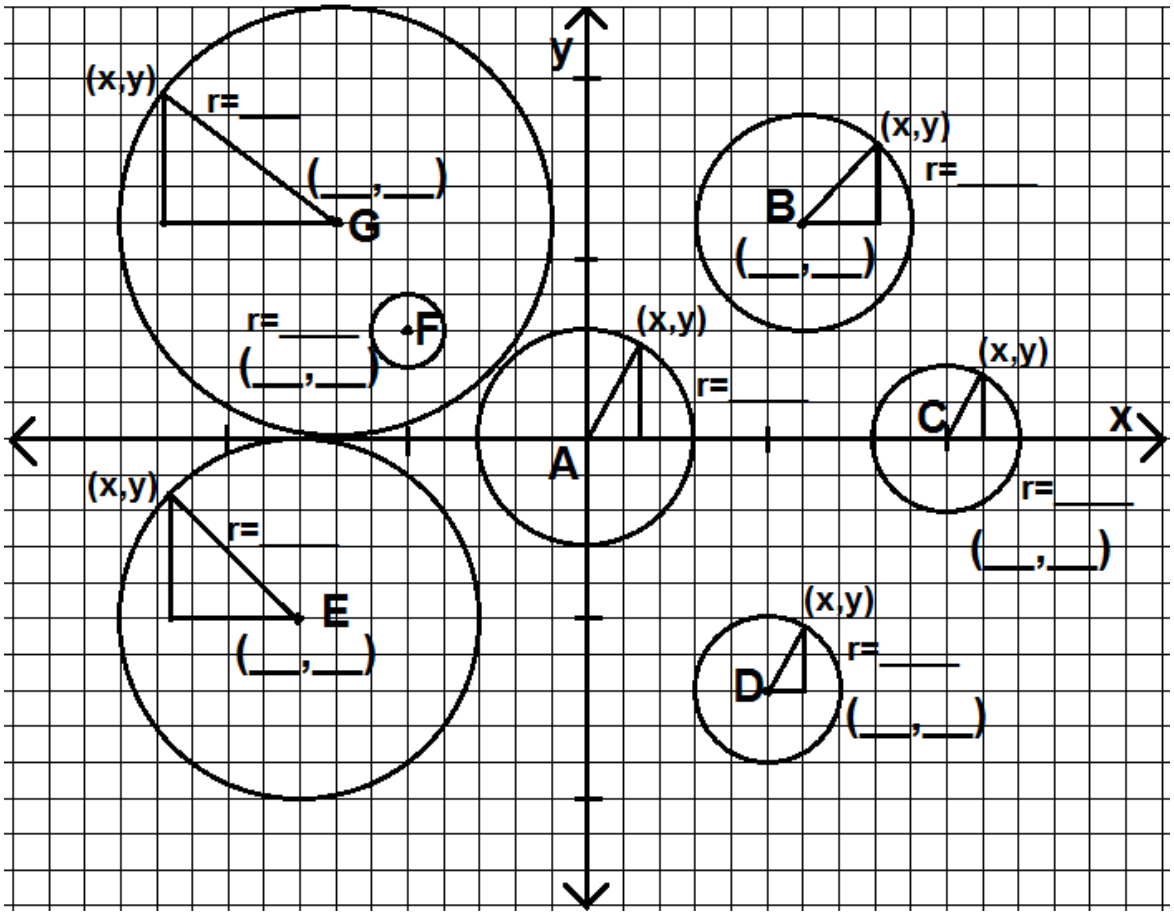
   Move point A to the coordinate (10, -2). Distance from A(10 , -2) to B(x, y)
   State the change in X and Y from point B to A _____
   Change in X:_____ Pythagorean Theorem:
   Change in Y:_____ _____

3. When you drag point B, what is the set of points that the path of B creates? _____
If you are unsure, right click on point B, choose TRACE ON and drag point B to see the set of points. To clear the trace press CTRL-F. Right click on B and select TRACE ON again to shut the trace off.

4. The equation of a circle is written as the Pythagorean Theorem as shown in #2 above. Use these equations to help determine the equations of the circles on the following graph.

Complete the table of information for each circle with the goal of writing the equation of each circle.
Circle A centered at the origin with radius 3 is shown as an example.

Circle	Center	Change in X	Change in Y	Radius	Pythagorean Theorem
A	(0 , 0)	X-0	Y-0	3	$(x-0)^2+(y-0)^2=3^2$
B	(_____,_____)				
C	(_____,_____)				
D	(_____,_____)				
E	(_____,_____)				
F	(_____,_____)				
G	(_____,_____)				



5. Given the equation of each circle, complete the table with the center and the radius.

Circle	Center	Change in X	Change in Y	Radius	Pythagorean Theorem
A					$(x-8)^2+(y-13)^2=5^2$
B					$(x+7)^2+(y+11)^2=81$
C					$(x+1)^2+(y-6)^2=10^2$
D					$(x-3)^2+(y+5)^2=36$