(A) Lesson Context

BIG PICTURE of this UNIT:	• mastery with algebraic skills to be used in our work with co-ordinate geometry (midpoint, length, slope) • understanding various geometric properties of quadrilaterals & triangles • how do you really prove that something is "true"?		
CONTEXT of this LESSON:	Where we've been You know how to find a midpoint, a length and how to work with Geogebra	Where we are Using length and midpoint in developing and working with equations of circles	Where we are heading How can I prove various geometric properties of quadrilaterals and triangles?

(B) Lesson Objectives:

a. Exploring the relationship between the midpoint, endpoints & circles (through geogebra)
b. Determine the equation of a circle centred at the origin
c. Explore and determine the equation of a circle NOT centred at the origin (through geogebra)

(C) FAST FIVE

The equation of a circle centered at the origin having a radius of r is $x^2 + y^2 = r^2$

a. Given the circle with the equation of $x^2 + y^2 = 36$. Using GEOGEBRA, determine: 1. Determine the radius ➔ 2. Determine the domain and range of this relation. 3. Determine the x- and y-intercepts of the circle. ➔ 4. If x = -3, determine the value(s) for y. ➔ 5. If y = 2, determine the value(s) for x. ➔	b. Given the circle with the equation of $x^2 + y^2 = 64$. Using ALGEBRA, determine: 1. Determine the radius ➔ 2. Determine the domain and range of this relation. 3. Determine the x- and y-intercepts of the circle. ➔ 4. If x = 5, determine the value(s) for y. ➔ 5. If y = -3, determine the value(s) for x. ➔

(D) Analysis of Circles ➔ Moving the Center

a. Given the circle with the equation of $x^2 + y^2 = 25$. Using GEOGEBRA, go to http://www.geogebratube.org/student/m52682 and determine:
   1. Move the sliders for "h" and "k" around to various positions
   2. Record the values of "h" and "k" as well as the new equation of the circle.

"h"	"k"	Equation

(E) Applications with Circles – In Class Assignment (ABCD blocks)

Investigation (Analysis of Circles)	Complete Analysis of Circles ➔ Moving the Center	30 points
"C" LEVEL	Circle Geometry & Simple Applications of Circles Complete Q11,12,14 (15 points each) Check your ANSWERS here	45 points
"B" LEVEL	Applications of Circles Complete Q10,13,15,18 (4 points each) ➔ ANS here	16 points
"A" LEVEL	Problem Solving with Circles Complete Q16, 19 & Section E (below) (5 points each)	10 points

(F) Homework/Resources

(1) From the worksheet linked here, http://mrsantowski.tripod.com/2014IntegratedMath2/Homework/equations_of_circles_practice.pdf , complete Q1,3,4,5,8,9,11,12 and Q13,14 are slightly more challenging questions. Try Q17 & 18 for challenges!!