Acquisition Lesson Planning Form
Plan for the Concept, Topic, or Skill – Systems involving Circles
Key Standards addressed in this Lesson: MM3G1d,e
Time allotted for this Lesson:

Standard: MM3G1d,e: d. Solve a system of equations involving a circle and a line. e. Solve a system of equations involving two circles.
Essential Question: What methods are used to determine the solutions of intersections of circles and lines or two circles?
Activating Strategies: What are the possible number(s) of solutions for a system of two circles? Why? Draw a picture to illustrate each.
Acceleration/Previewing: (Key Vocabulary) Point of intersection Systems of equations Quadratic system
Teaching Strategies: Use the graphic organizer to help students organize the steps. Circle Task Part 2
Task: Radio Stations Task Crop Circles Task
Distributed Guided Practice: Worksheet
Extending/Refining Strategies: Crop Circles Task
Summarizing Strategies: Journal: Student will write a letter to an absent student explaining how to solve systems involving circles. Students will then exchange papers and rate the work on a 0 to 3 scale.

Graphic Organizer #1
Solving Systems Involving Circles

Circle and Lines

$(x-20)^2+(y-20)^2=25$

$y-20=\frac{3}{4}(x-20)$

Step 1: Convert the linear equation to slope – intercept form. (Be careful, this may be done for you.)

Step 2: Substitute <u>your equation from step 1</u> into the circle equation for *y*.

Step 3: Square the binomials.

Step 4: Combine like terms and write the equation in standard form.

Step 5: Use the quadratic formula (or any method) to find the two values for x.

Step 6: Substitute the values of x into the linear equations (from Step 1) to find the two values for y.

Step 7: Write the solution set. Write the values as ordered pairs.

Graphic Organizer #2
Solving Systems Involving Circles

Circle and Circles

$x^2+y^2-2=0$

$x^2+y^2+8x-10=0$

Step 1: Subtract the equations to eliminate the squared terms. (Make sure the equations are written in general form.)

Step 2: Solve the equation for x or y depending on which variable is still there.

Step 3: Substitute the answer from step 2 into the equations and solve for the other variable.

Step 4: Write the solutions as ordered pairs.

Guided Practice Worksheet
Solving Systems involving Circles

Solve the systems.

1) $x^2 + y^2 = 16$
$Y = 3 - x$

2) $x^2 + y^2 = 36$
$Y = 2x + 15$

3) $(x+4)^2 + (y - 10)^2 = 25$
$X = 2$

4) $(x + 4)^2 + (y + 2)^2 = 25$
$4x + 3y = 3$

5) $x^2 + y^2 = 28$
$Y = -3x + 1$

6) $x^2 + y^2 - 25 = 0$
$X^2 + y^2 + 6x - 7 = 0$

7) $x^2 + y^2 - 16 = 0$
$X^2 + y^2 + 2x - 24 = 0$

8) $x^2 + y^2 - 9 = 0$
$X^2 + y^2 + 20y + 70 = 0$

9) $x^2 + y^2 = 49$
$(x - 6)^2 + (y - 2)^2 = 9$

10) $(x - 1)^2 + (y + 5)^2 = 25$
$(x - 1)^2 + (y - 4)^2 = 16$