Equations of a Circle

1. How does the equation of a circle change when you move point B? What specific variable is changing?

   The number on the right changes (the radius variable)

2. How does the equation of a circle change when you move point A? What specific variable(s) are changing?

   The number with the x and y change.

3. How does the equation of a circle change when you move both points A and B? Again, what specific variables are changing?

   Both of the parts of the equation change on BOTH sides of the = sign.

4. Is there a difference in the equation if the center is on the origin as opposed to anywhere else on the coordinate plane? Give an example of an equation of a circle when the center is on the origin *and* one example of an equation of a circle when the center is not on the origin.

   If the center is on the origin, the variables stay x and y, if not, they have a number with them.
   $x^2 + y^2 = 125$ $(x+2)^2 + (y-5)^2 = 63$

Practice Problems Part 1

1. $x^2 + y^2 = 49$ C: _   (0,0)__ r = _7_____

2. $(x-4)^2 + (y-2)^2 = 16$ C: _____(4,2)_ r = ____4_____

3. $(x-5)^2 + y^2 = 64$ C: ___(5,0)___ r = _____8_____

4. $x^2 + (y+2)^2 = 12$ C: _____(0,-2) r = _____ $\sqrt{12}$ _____

Before continuing, use the diagram on page 3.2 (on the handheld TI Nspire) to check your answers for accuracy.

5. Write the equation of a circle with the center (3, 4) and a radius of length 3.
    $(x-3)^2 + (y-4)^2 = 9$

6. Write the equation of a circle with the center (-4, 5) and a radius of length 4.
    $(x+4)^2 + (y-5)^2 = 16$

7. Write the equation of a circle with the center (7, 0) and a radius of length ¾.
    $(x-7)^2 + (y)^2 = \dfrac{9}{16}$

8. Write the equation of a circle with the center (-3, -6) and a radius of length √5.
    $(x+3)^2 + (y+6)^2 = 5$

Use the diagram on page 3.2 (on the handheld TI Nspire) to check your answers for accuracy.

9. Can you and your partner come up the equation of a circle whose center is at the origin *and* the equation of a circle whose center is (h, k)?

    $(x-h)^2 + (y-k)^2 = r^2$ $x^2 + y^2 = r^2$

LET'S SHARE OUR FINDINGS/DISCOVERIES AS A WHOLE CLASS!!!!