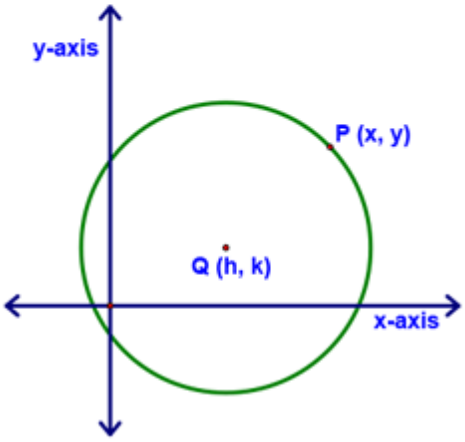
Circles - Lesson 13-6

Today, we learned the general form for the equation of a circle:

Theorem 121

The equation of a circle whose center is (h, k) and whose radius is r is given by the equation $(x - h)^2 + (y - k)^2 = r^2$.



Then we did the following example:

Find the equation of a circle whose center is (1, 5) and whose radius is 4.

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

This example should have been straight forward...simply replace h with 1, k with 5 and r with 4 in the general equation. We then did the following example:

Find the center and radius of a the circle whose equation is $(x - 2)^2 + (y + 7)^2 = 64$

Center is (2, -7)

Radius is 8 ($\sqrt{64}$)

Again, this should have been relatively easy...you're just going backwards using the equation to determine (h, k) and r. We finished by doing the following:

Is $x^2 - 8x + y^2 - 10y = 8$ an equation of a circle? If so, how do you know?

Hint: Try completing the square!

$x^2 - 8y + 16 + y^2 - 10y + 25 = 8 + 16 + 25$

$\Rightarrow (x - 4)^2 + (y - 5)^2 = 49$

$\Rightarrow$ This is a circle, with center (4, 5) and radius 7

This was a little more complex, requiring you to remember how to complete the square. The key is to remember that whatever you add to one side of the equation, you must also add to the other (balance your equation!!)! Hopefully, this makes sense to you.

That's it! We worked on homework for the rest of the class...you've completed geometry!!