## WELCOME

Chapter 16.5b

## Ch. 16.5b Learning Targets

- I can rewrite the equation of a circle in standard form using completing the square.
- I can determine if a point is on a circle given its equation


## Writing Circles in Standard Form

## Given the general equation of a circle we can write it in standard form using completing the square on both $x \& y$.

Step 1: Move all variables to one side and constants to the other.

Step 2: Group x variables together and $y$ variables together.

Step 3: Complete the square for both the $x$ and $y$ quadratic by adding $\left(\frac{b}{2}\right)^{2}$

Step 4: Factor both $\mathbf{x} \& \mathrm{y}$ to create the equation $(x-h)^{2}+(x-k)^{2}=r^{2}$

$$
x^{2}+y^{2}+4 x-6 y+2=0
$$

## Try it...

$$
x^{2}+2 x+y^{2}-10 y=55
$$

## Is a given point on a circle?

In the given equation, $(x-1)^{2}+(y+3)^{2}=4$, is the point $(1,-1)$ on the circle?

