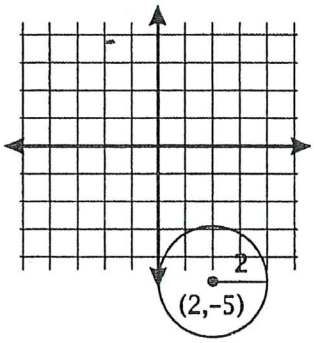
Name Key Date 2012

10.7 – Equation of a Circle

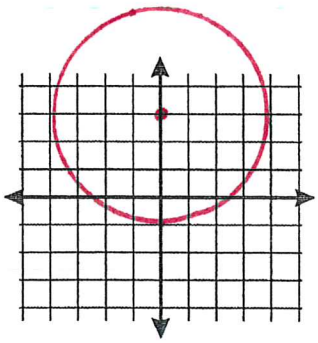
Graph each circle and label its center and radius.

Example: $(x-2)^2+(y+5)^2=4$
center $(2,-5)$
radius $= 2$



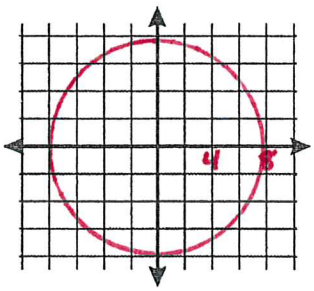
1. $x^2+(y-3)^2=16$

center (0,3)
radius = 4



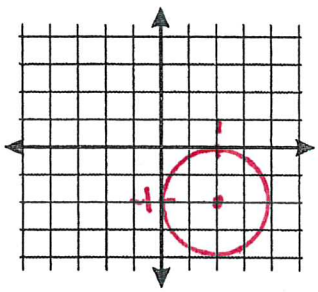
2. $x^2+y^2=64$

center (0,0)
radius = 8



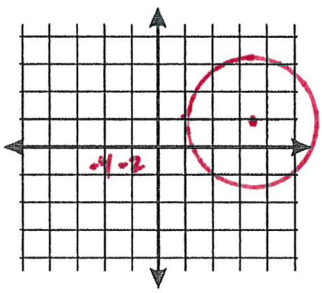
3. $(x-1)^2+(y+1)^2=1$

center (1,-1)
radius = 1



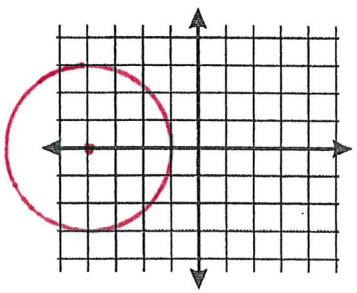
4. $(x-7)^2+(y-2)^2=25$

center (7,2)
radius = 5



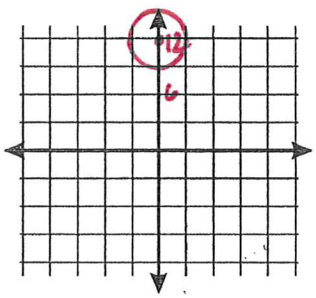
5. $(x+4)^2+y^2=9$

center (-4,0)
radius = 3



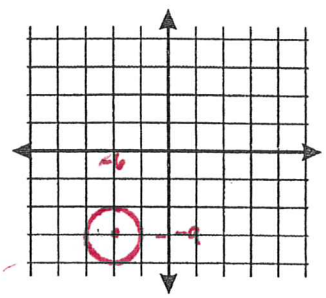
6. $x^2+(y-12)^2=20$

center (0,12)
radius = $2\sqrt{5}$

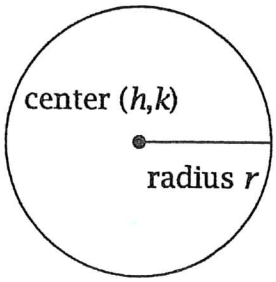


7. $(x+6)^2+(y+9)^2=15$

center (-6,-9)
radius = $\sqrt{15}$



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



Given the equation for a circle, identify its center and its radius.

Example: $(x-2)^2+(y-3)^2=25$
center $(2,3)$
radius $= 5$

1. $(x-4)^2+(y+10)^2=144$

center $(4,-10)$
radius $=12$

2. $x^2+(y-7)^2=49$

center $(0,7)$
radius $=7$

3. $x^2+y^2=1$

center $(0,0)$
radius $=1$

4. $(x+3)^2+(y+11)^2=15$

center $(-3,-11)$
radius $=\sqrt{15}$

5. $(x-15)^2+y^2=10$

center $(15,0)$
radius $=\sqrt{10}$

Given the center and the radius of a circle, write the equation describing the circle.

Example: $(0,4), r=9$
$(x-0)^2+(y-4)^2=81$
$x^2+(y-4)^2=81$

1. $(0,0), r=8$

$x^2+y^2=64$

2. $(-2,3), r=2$

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

3. $(-7,-18), r=14$

$(x+7)^2+(y+18)^2=196$

4. $(12,9), r=1$

$(x-12)^2+(y-9)^2=1$

5. $(10,0), r=22$

$(x-10)^2+y^2=484$

For the following, graph each circle by first completing the square.

1) $x^2 + y^2 + 2x - 8 = 0$

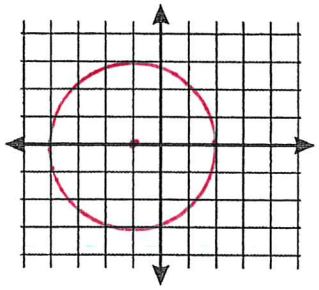
$x^2+2x \quad + y^2 = 8$

$x^2+2x+1 + y^2 = 8+1$

$(x+1)^2 + y^2 = 9$

Center $(-1,0)$

Radius $= 3$



2) $x^2 + y^2 - 4y = 12$

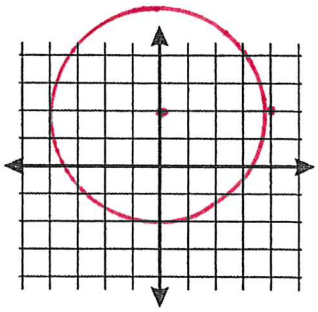
$x^2 + y^2 - 4y \quad = 12$

$x^2 + y^2 - 4y + 4 = 12 + 4$

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

Center $(0,2)$

Radius $= 4$



3) $x^2 + y^2 - 2x + 4y = -1$

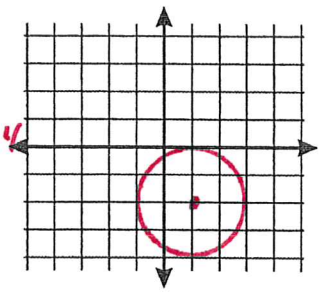
$x^2 - 2x \quad + y^2 + 4y \quad = -1$

$x^2 - 2x + 1 + y^2 + 4y + 4 = -1 + 1 + 4$

$(x-1)^2 + (y+2)^2 = 4$

Center $(1,-2)$

Radius $= 2$



4) $x^2 + y^2 + 4x + 2y = 4$

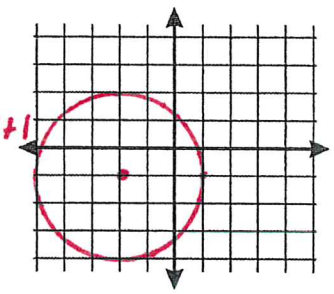
$x^2 + 4x \quad + y^2 + 2y \quad = 4$

$x^2 + 4x + 4 + y^2 + 2y + 1 = 4 + 4 + 1$

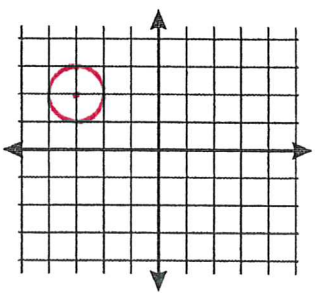
$(x+2)^2 + (y+1)^2 = 9$

Center $(-2,-1)$

Radius $= 3$



5) $x^2 + y^2 + 6x - 4y = -12$



$x^2 + 6x \quad + y^2 - 4y \quad = -12$

$x^2 + 6x + 9 + y^2 - 4y + 4 = -12 + 9 + 4$

$(x+3)^2 + (y-2)^2 = 1$

Center $(-3,2)$

radius $= 1$