Day 7 – Equations of Circles

A circle is the set of all points (x, y) in a plane that are equidistant from a fixed point called the center of the circle. The distance between the center and any point (x, y) on the circle is called the radius.

The Standard Form of a Circle Centered <u>at the Origin</u>:	The Standard Form of a Circle Centered <u>Not at the Origin</u>:
$x^2 + y^2 = r^2$	$(x - h)^2 + (y - k)^2 = r^2$
(0 ,0) is the center	(h, k) is the center
r is the radius	r is the radius

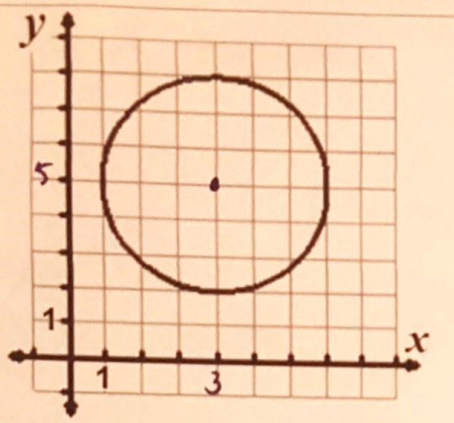
The General Form of a Circle:

$$Ax^2 + By^2 + Cx + Dy + E = 0$$

Name: $(x-h)^2+(y-k)^2=r^2$ (h,k) = center $\sqrt{r^2}=r$ Date:

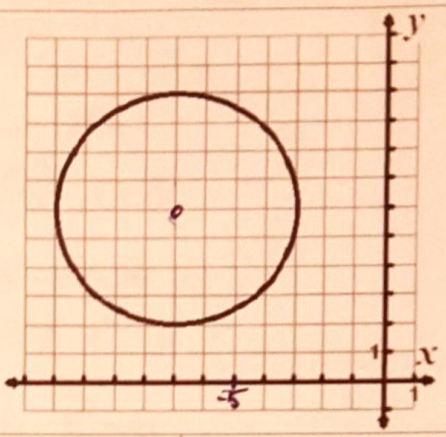
WRITING CIRCLE EQUATIONS FROM GRIDS

For #1-12, write the coordinates (h , k) of the center point, the radius length and the equation of each circle.

① 

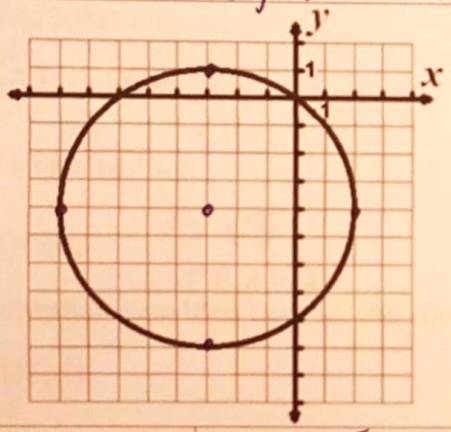
Center (h, k) = (3, 5) Radius = 3

Equation: $(x-3)^2+(y-5)^2=9$

② 

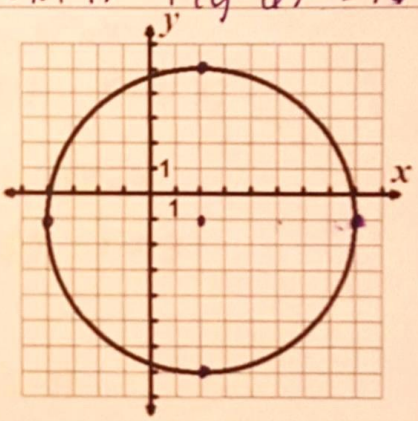
Center (h, k) = (-7, 6) Radius = 4

Equation: $(x+7)^2+(y-6)^2=16$

③ 

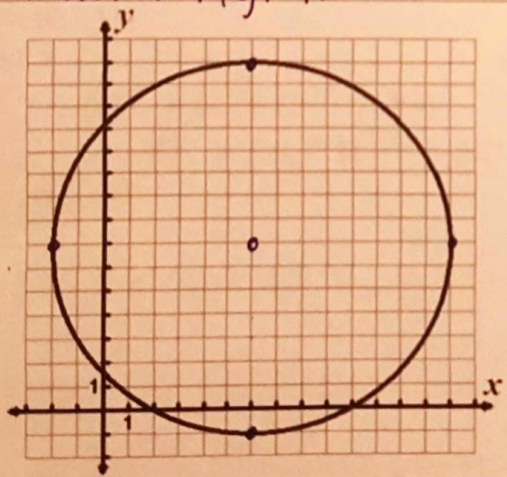
Center (h, k) = (-3, -4) Radius = 5

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

④ 

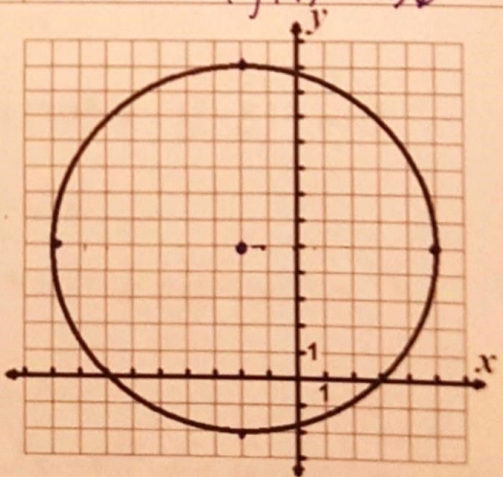
Center (h, k) = (2, -1) Radius = 6

Equation: $(x-2)^2+(y+1)^2=36$

⑤ 

Center (h, k) = (6, 7) Radius = 8

Equation: $(x-6)^2+(y-7)^2=64$

⑥ 

Center (h, k) = (-2, 5) Radius = 7

Equation: $(x+2)^2+(y-5)^2=49$

Geometry

Name_____

Equations of Circles

Date_____

Identify the center and radius of each.

1) $(x-9)^2+(y-6)^2=4$

C: (9,6) r: 2

2) $(x+4)^2+(y-12)^2=9$

C: (-4,12) r=3

3) $(x+9)^2+(y+4)^2=95$

C: (-9,-4) r: $\sqrt{95}$

4) $(x+8)^2+(y-4)^2=36$

C: (-8,4) r=6

5) $(x-7)^2+(y+11)^2=25$

C: (7,-11) r=5

6) $(x+10)^2+(y-5)^2=41$

C: (-10,+5) r=$\sqrt{41}$

7) $(x-4)^2+(y-3)^2=81$

C: (4,3) r=9

8) $(x+3)^2+(y-8)^2=77$

C: (-3,8) r=$\sqrt{77}$

9) $(x-16)^2+(y+14)^2=8$

C: (16,-14) r=$\sqrt{8}$ r=$2\sqrt{2}$

10) $(x-15)^2+(y+8)^2=9$

C: (15,-8) r=3

Use the information provided to write the equation of each circle.

11) Center: (11, 2)
Radius: 6

$(x-11)^2+(y-2)^2=36$

12) Center: (–12, –5)
Radius: 4

$(x+12)^2+(y+5)^2=16$

13) Center: (0, –11)
Radius: 5

$(x-0)^2+(y+11)^2=25$

$x^2+(y+11)^2=25$

14) Center: (–15, 8)
Radius: 3

$(x+15)^2+(y-8)^2=9$

15) Center: (1, –15)
Radius: 3

$(x-1)^2+(y+15)^2=9$

16) Center: (–3, 16)
Radius: 3

$(x+3)^2+(y-16)^2=9$

17) Center: (6, 0)
Radius: 7

$(x-6)^2+(y-0)^2=49$

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

18) Center: (1, 7)
Radius: 7

$(x-1)^2+(y-7)^2=49$

19) Center: (10, 10)
Radius: 3

$(x-10)^2+(y-10)^2=9$

20) Center: (–11, 13)
Radius: 5

$(x+11)^2+(y-13)^2=25$