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

(h,k) – center

r – radius

12.10
Equations of a Circle

Name Key Date _____ Hour _____

Ready

Find the equation of the following circles:

1. Center (0, 0), radius of 6

$x^2+y^2=36$

2. Center (1, 2), radius of 3

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

3. Center (-1, -1), radius of 5

$(x+1)^2+(y+1)^2=25$

4. Center of (4, -2), radius of $\sqrt{50}$

$(x-4)^2+(y+2)^2=50$

Set

Place each equation (#5-20) in the corresponding cells of the table below. Make up your own equation for any empty cells.

Equations:

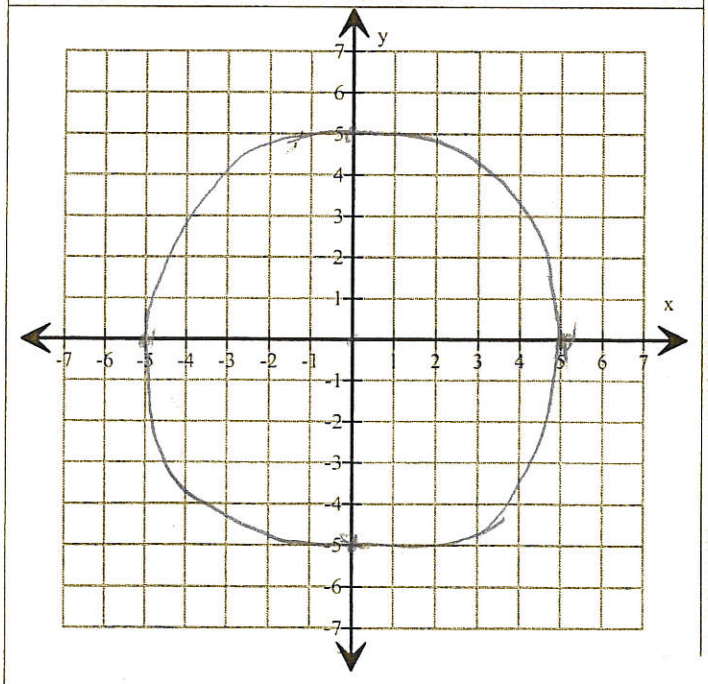
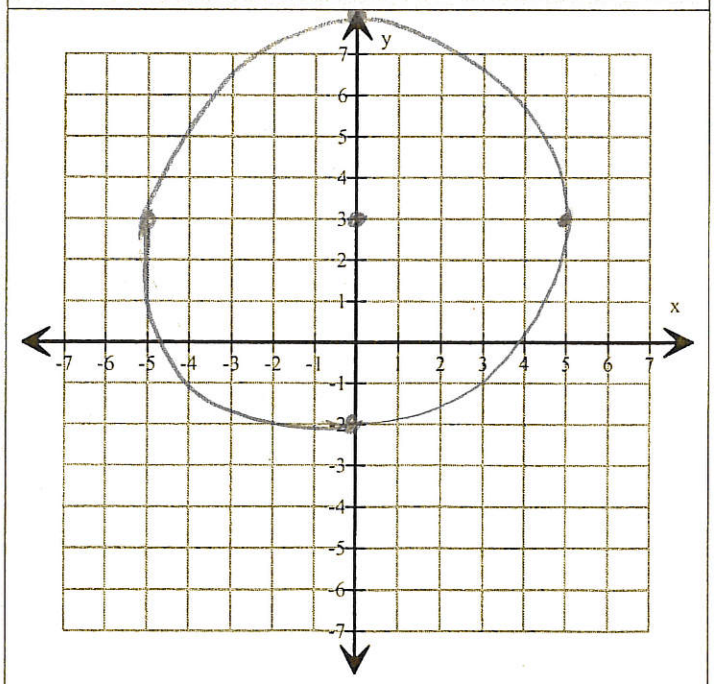
5. $(x-2)^2+(y-1)^2=25$ (2,1) $r=5$	6. $(x+2)^2+(y-1)^2-100=0$ $+100$ $+100$ (-2,1) $r=10$
7. $x^2+(y+1)^2=25$ (0,-1) $r=5$	8. $(y-1)^2+(x-2)^2=5$ (2,1) $r=\sqrt{5}$
9. $(x+2)^2+(y-1)^2=10$ (-2,1) $r=\sqrt{10}$	10. $x^2+(y+1)^2=100$ (0,-1) $r=10$
11. $(x-2)^2+(y-1)^2+15=25$ $=10$ -15 -15 (2,1) $r=\sqrt{10}$	12. $(x-2)^2+(1+y)^2=100$ $(y+1)$ (2,-1) $r=10$
13. $(y+1)^2+x^2=10$ (0,-1) $r=\sqrt{10}$	14. $(x-2)^2+(y+1)^2=10$ (2,-1) $r=\sqrt{10}$
15. $(x-2)^2+(y+1)^2+4=9$ $=5$ -4 -4 (2,-1) $r=\sqrt{5}$	16. $(y-1)^2+(x+2)^2=25$ (-2,1) $r=5$
17. $(x-2)^2+(y-1)^2=100$	18. $(x-2)^2+(y+1)^2=25$
19. $x^2+(y+1)^2=10$	20. $(x+2)^2+(y-1)^2=5$

Categorizing Equations

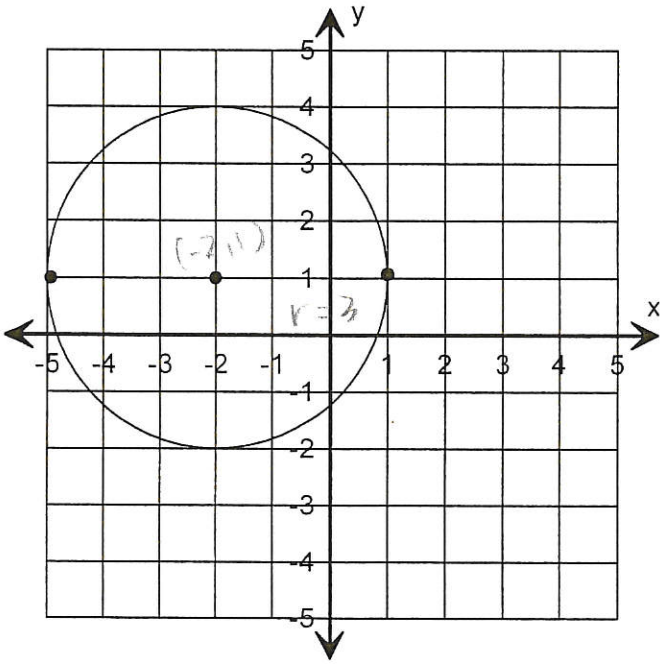
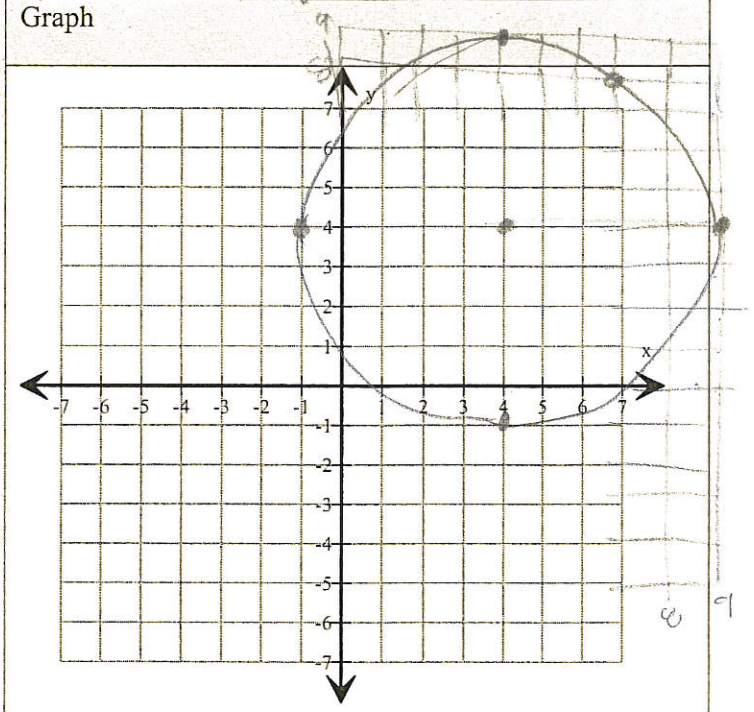
	Center at (2,1)	Center at (2,−1)	Center at (0,−1)	Center (−2, 1)
Radius of $\sqrt{5}$	8	15	19 *	20 *
Radius of $\sqrt{10}$	11	14	13	9
Radius of 5	5	18 *	7	16
Radius of 10	17 *	12	10	6

Go!

Complete the missing entries in the table.

Equation	Equation
21. $x^2 + y^2 = 25$	22. $x^2 + (y-3)^2 = 25$
Graph	Graph
	

Center, Point on Circle	Center, Point on Circle
Center (0, 0) Point (0, 5)	Center (0,3) Point (5,3)
Three Points on Circle	**Three Points on Circle**
(-5,0), (0,-5), (5,0) (3,4), (-3,4), (3,-4)	(0,8), (-5,3), (0,-2)

Equation	Equation
23. $(x+2)^2+(y-1)^2=9$	24. $(x-4)^2+(y-4)^2=25$
Graph	**Graph**
	
Center, Point on Circle	**Center, Point on Circle**
Center (-2, 1) Point (1, 1)	Center (4, 4) Point (4, 9)
Three Points on Circle	**Three Points on Circle**
(-2,4), (-5,1), (-2,-2) (0,3.2), (0,-1.2), (-3.2,3.8)	(4,-1) (7, 8) (9, 4) (-1, 4)