

# 11-4 Practice

Form G

## Circles in the Coordinate Plane

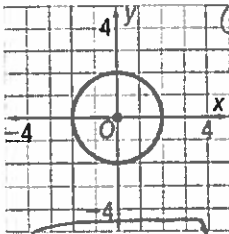
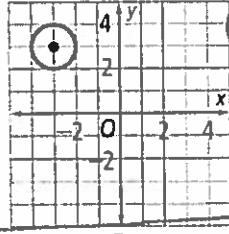
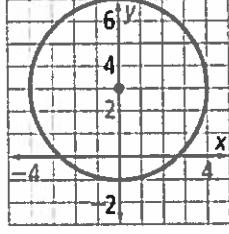
Find the center and radius of each circle.

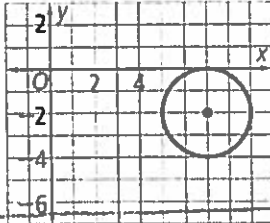
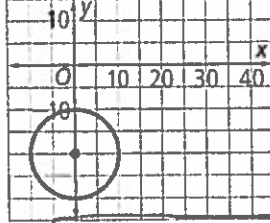
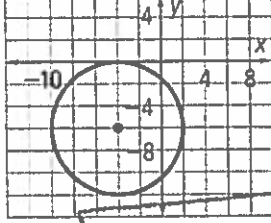
1.  $x^2 + y^2 = 36$   $(0,0)$   $r=6$       2.  $(x-2)^2 + (y-7)^2 = 49$   $(2,7)$   $r=7$   
 3.  $(x+1)^2 + (y+6)^2 = 16$   $(-1,-6)$   $r=4$       4.  $(x+3)^2 + (y-11)^2 = 12$   $(-3,11)$   $r=2\sqrt{3}$

Write the standard equation of each circle.

5. center  $(0,0)$ ;  $r=7$   $x^2+y^2=49$       6. center  $(4,3)$ ;  $r=8$   $(x-4)^2+(y-3)^2=64$   
 7. center  $(5,3)$ ;  $r=2$   $(x-5)^2+(y-3)^2=4$   
 8. center  $(-5,4)$ ;  $r=1/2$   $(x+5)^2+(y-4)^2=1/4$       9. center  $(-2,-5)$ ;  $r=\sqrt{5}$   $(x+2)^2+(y+5)^2=5$   
 10. center  $(-1,6)$ ;  $r=\sqrt{5}$   $(x+1)^2+(y-6)^2=5$

Write the standard equation of each circle.

11.   $(0,0)$   $r=2$   
 $x^2+y^2=4$
12.   $(3,3)$   $r=1$   
 $(x+3)^2+(y-3)^2=1$
13.   $(0,3)$   $r=4$   
 $x^2+(y-3)^2=16$

14.   $(7,-2)$   $r=2$   
 $(x-7)^2+(y+2)^2=4$
15.   $(0,-20)$   $r=10$   
 $x^2+(y+20)^2=100$
16.   $(-4,-6)$   $r=6$   
 $(x+4)^2+(y+6)^2=36$

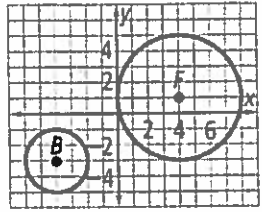
Find the center and radius of each circle. Then graph the circle.

17.  $x^2 + y^2 = 25$   $(0,0)$   $r=5$       18.  $(x-3)^2 + (y-5)^2 = 9$   $(3,5)$   $r=3$   
 19.  $(x+2)^2 + (y+4)^2 = 16$   $(-2,-4)$   $r=4$       20.  $(x+1)^2 + (y-1)^2 = 36$   $(-1,1)$   $r=6$

Write the standard equation of the circle with the given center that passes through the given point.

21. center  $(0,0)$ ; point  $(3,4)$   $(3-0)^2+(4-0)^2=r^2$   
 $9+16=r^2$   
 $25=r^2$   
 $x^2+y^2=25$
22. center  $(5,9)$ ; point  $(2,9)$   $(2-5)^2+(9-9)^2=r^2$   
 $(-3)^2+0=r^2$   
 $9+0=r^2$   
 $(x-5)^2+(y-9)^2=9$
23. center  $(-4,-3)$ ; point  $(2,2)$   $(2-(-4))^2+(2-(-3))^2=r^2$   
 $(2+4)^2+(2+3)^2=r^2$   
 $36+25=r^2$   
 $61=r^2$   
 $(x+4)^2+(y+3)^2=61$
24. center  $(7,-2)$ ; point  $(-1,-6)$   $(-1-7)^2+(-6-(-2))^2=r^2$   
 $(-8)^2+(-4)^2=r^2$   
 $64+16=r^2$   
 $80=r^2$   
 $(x-7)^2+(y+2)^2=80$

Write the standard equation of each circle in the diagram at the right.

25.  $\square B$   $(x+4)^2+(y+3)^2=4$
26.  $\square F$   $(x-4)^2+(y-1)^2=16$
-   $(-4,-3)$   $r=2$        $(4,1)$   $r=4$



# 11-4 Practice (continued)

Form G

## Circles in the Coordinate Plane

Write an equation of a circle with diameter  $AB$ .

27.  $A(0, 0), B(-6, 8)$

midpt  $(-3, 4)$   
 $(x+3)^2 + (y-4)^2 = 25$

28.  $A(0, -1), B(2, 1)$

midpt  $(1, 0)$   
 $r = \sqrt{2}$   
 $(x-1)^2 + y^2 = 2$

29.  $A(7, 5), B(-1, -1)$

midpt  $(3, 2)$   
 $r = 5$   
 $(x-3)^2 + (y-2)^2 = 25$

30. Reasoning Circles in the coordinate plane that have the same center and congruent radii are identical. Circles with congruent radii are congruent. In (a) through (g), circles lie in the coordinate plane.

- a. Two circles have equal areas. Are the circles congruent? *True*
- b. Two circles have circumferences that are equal in length. Are the circles congruent? *Yes same radii*
- c. How many circles have an area of  $36\pi \text{ m}^2$ ?  *$\infty$  b/c diff centers*
- d. How many circles have a center of  $(4, 7)$ ?  *$\infty$  b/c diff radii*
- e. How many circles have an area of  $36\pi \text{ m}^2$  and center  $(4, 7)$ ? *only 1*
- f. How many circles have a circumference of  $6\pi$  in. and center  $(4, 7)$ ? *only 1*
- g. How many circles have a diameter with endpoints  $A(0, 0)$  and  $B(-6, 8)$ ? *only 1*

Identify the center and radius of each circle:

31.  $x^2 + 2x + y^2 - 6y = -1$

$x^2 + 2x + 1 + y^2 - 6y + 9 = -1 + 1 + 9$   
 $(x+1)(x+1) + (y-3)(y-3) = 9$   
 $(x+1)^2 + (y-3)^2 = 9$

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

$(x-2)(x-2) + y^2 = 12 + 4$   
 $(x-2)^2 + y^2 = 16$

33.  $y^2 = 24 - x^2 - 10x$

$y^2 + x^2 + 10x + 25 = 24 + 25$   
 $y^2 + (x+5)(x+5) = 49$   
 $y^2 + (x+5)^2 = 49$

34.  $y^2 - 4y + 1 + x^2 + 2x = 21$

$x^2 + 2x + 1 + y^2 - 4y + 4 = 21 + 1 + 4$   
 $(x+1)(x+1) + (y-2)(y-2) = 25$   
 $(x+1)^2 + (y-2)^2 = 25$