

Name \_\_\_\_\_

Date \_\_\_\_\_

## Writing Equations of Circles

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

1)  $8x + x^2 - 2y = 64 - y^2$

2)  $137 + 6y = y^2 - x^2 - 24x$

3)  $x^2 + y^2 + 14x - 12y + 4 = 0$

4)  $y^2 + 2x + x^2 = 24y - 120$

5)  $x^2 + 2x + y^2 = 55 + 10y$

6)  $8x + 32y + y^2 = -263 - x^2$

7) Center:  $(-11, -8)$

8) Center:  $(-6, -15)$

Radius: 4

Radius:  $\sqrt{5}$ 

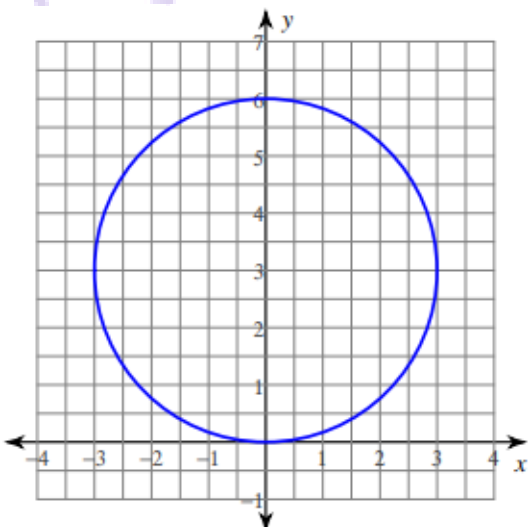
9)  $(x - 16)^2 + (y - 6)^2 = 1$

10)  $(x + 5)^2 + (y + 7)^2 = 36$

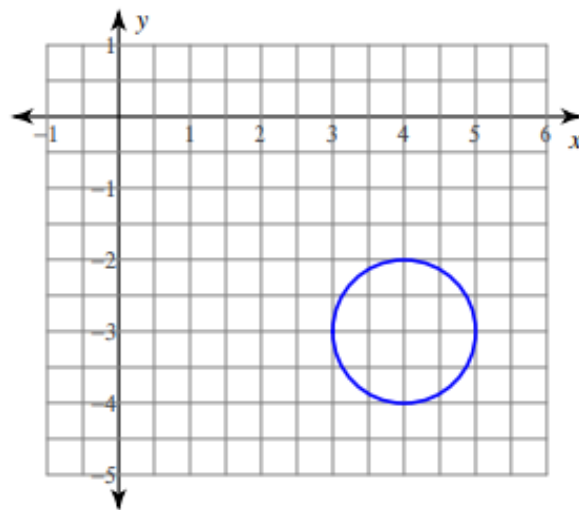
Translated 4 left, 2 up

Translated 5 left, 4 down

11)



12)



13) Ends of a diameter:  $(-17, -9)$  and  $(-19, -9)$

14) Ends of a diameter:  $(-3, 11)$  and  $(3, -13)$

15) Center:  $(-15, 3\sqrt{7})$

Area:  $2\pi$

16) Center:  $(-11, -14)$

Area:  $16\pi$

17) Center:  $(-5, 12)$

Circumference:  $8\pi$

18) Center:  $(15, 14)$

Circumference:  $2\pi\sqrt{15}$

19) Center:  $(2, -5)$

Point on Circle:  $(-7, -1)$

20) Center:  $(14, 17)$

Point on Circle:  $(15, 17)$

21) Center:  $(-15, 9)$

Tangent to  $x = -17$

22) Center:  $(-2, 12)$

Tangent to  $x = -5$

23) Center lies on the  $x$  - axis

Tangent to  $x = 7$  and  $x = -13$

24) Center lies in the fourth quadrant

Tangent to  $x = 7, y = -4,$  and  $x = 17$

25) Three points on the circle:

$(-18, -5), (-7, -16),$  and  $(4, -5)$

26) Three points on the circle:

$(-7, 6), (9, 6),$  and  $(-4, 13)$

27)  $x^2 + y^2 + 14x + 12y + 76 = 0$

Translated 2 right, 4 down

28)  $x^2 + y^2 - 10x + 20y + 61 = 0$

Translated 1 left, 2 down

29)  $x^2 + y^2 + 14x - 8y + 29 = 0$

Translated 3 right, 4 down

30)  $4y + y^2 = -28x - x^2 - 191$

Translated 4 right

**ANSWERS**

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

1)  $8x + x^2 - 2y = 64 - y^2$

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

2)  $137 + 6y = y^2 - x^2 - 24x$

$(x + 12)^2 + (y + 3)^2 = 9$

3)  $x^2 + y^2 + 14x - 12y + 4 = 0$

$(x + 7)^2 + (y - 6)^2 = 81$

4)  $y^2 + 2x + x^2 = 24y - 120$

$(x + 1)^2 + (y - 12)^2 = 25$

5)  $x^2 + 2x + y^2 = 55 + 10y$

$(x + 11)^2 + (y + 8)^2 = 81$

6)  $8x + 32y + y^2 = -263 - x^2$

$(x + 4)^2 + (y + 16)^2 = 9$

7) Center:  $(-11, -8)$

Radius: 4

$(x + 11)^2 + (y - 8)^2 = 16$

8) Center:  $(-6, -15)$

Radius:  $\sqrt{5}$ 

$(x + 6)^2 + (y + 15)^2 = 5$

9)  $(x - 16)^2 + (y - 6)^2 = 1$

Translated 4 left, 2 up

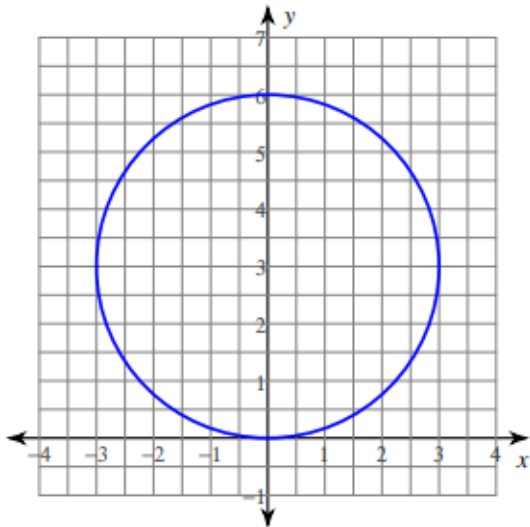
$(x - 12)^2 + (y - 8)^2 = 1$

10)  $(x + 5)^2 + (y + 7)^2 = 36$

Translated 5 left, 4 down

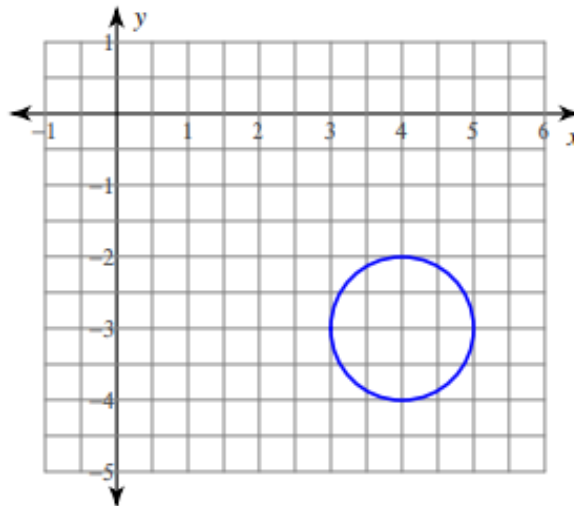
$(x + 10)^2 + (y + 11)^2 = 36$

11)



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

12)



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

13) Ends of a diameter:  $(-17, -9)$  and  $(-19, -9)$

$$(x + 18)^2 + (y + 9)^2 = 1$$

14) Ends of a diameter:  $(-3, 11)$  and  $(3, -13)$

$$x^2 + (y + 1)^2 = 153$$

15) Center:  $(-15, 3\sqrt{7})$

Area:  $2\pi$

$$(x + 15)^2 + (y - 3\sqrt{7})^2 = 2$$

16) Center:  $(-11, -14)$

Area:  $16\pi$

$$(x + 11)^2 + (y + 14)^2 = 16$$

17) Center:  $(-5, 12)$

Circumference:  $8\pi$

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

18) Center:  $(15, 14)$

Circumference:  $2\pi\sqrt{15}$

$$(x - 15)^2 + (y - 14)^2 = 15$$

19) Center:  $(2, -5)$

Point on Circle:  $(-7, -1)$ 

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

20) Center:  $(14, 17)$

Point on Circle:  $(15, 17)$ 

$$(x - 14)^2 + (y - 17)^2 = 1$$

21) Center:  $(-15, 9)$

Tangent to  $x = -17$ 

$$(x + 15)^2 + y^2 = 100$$

22) Center:  $(-2, 12)$

Tangent to  $x = -5$ 

$$(x - 2)^2 + (y - 12)^2 = 25$$

23) Center lies on the  $x -$  axis

Tangent to  $x = 7$  and  $x = -13$ 

$$(x + 3)^2 + y^2 = 100$$

24) Center lies in the fourth quadrant

Tangent to  $x = 7, y = -4,$  and  $x = 17$ 

$$(x - 12)^2 + (y - 9)^2 = 25$$

25) Three points on the circle:

 $(-18, -5), (-7, -16),$  and  $(4, -5)$ 

$$(x + 7)^2 + (y + 5)^2 = 121$$

26) Three points on the circle:

 $(-7, 6), (9, 6),$  and  $(-4, 13)$ 

$$(x - 1)^2 + \left(y - \frac{47}{7}\right)^2 = \frac{3161}{49}$$

27)  $x^2 + y^2 + 14x + 12y + 76 = 0$

Translated 2 right, 4 down

$$(x + 5)^2 + (y + 10)^2 = 9$$

28)  $x^2 + y^2 - 10x + 20y + 61 = 0$

Translated 1 left, 2 down

$$(x \pm 4)^2 + (y + 12)^2 = 64$$

29)  $x^2 + y^2 + 14x - 8y + 29 = 0$

Translated 3 right, 4 down

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

30)  $4y + y^2 = -28x - x^2 - 191$

Translated 4 right

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