

Name: \_\_\_\_\_  
PCH: Circles

Date: \_\_\_\_\_  
Ms. Loughran

Do Now:

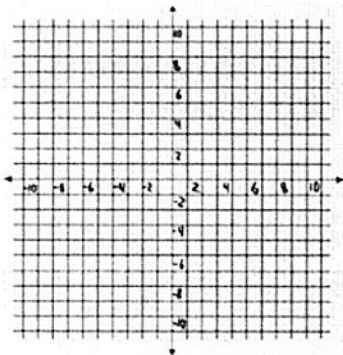
1. Find the length of the line segment determined by points  $A(x, y)$  and  $C(h, k)$ .

An equation of the circle with center  $(h, k)$  and radius  $r$  is

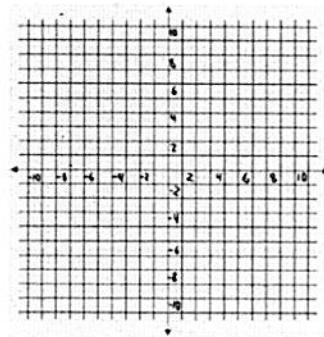
This is called the standard form for the equation of the circle. If the center of the circle is the origin, then the equation is

1. Graph each equation.

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



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



2. Find an equation of the circle with radius 3 and center  $(-1, 4)$ .

3. Find the center and radius of the circle whose equation is  $(x + 2)^2 + (y - 3)^2 = 10$ .

4. Write an equation of the circle whose diameter has endpoints  $(0, 0)$  and  $(6, 8)$ .

5. Points  $P(1,-5)$  and  $Q(-3,3)$  are the endpoints of a diameter of a circle. Find the center, radius, and equation of the circle.

6. Find the center and radius of the circle  $x^2 + y^2 + 4x - 6y - 12 = 0$ .

7. Find the center and radius of the circle whose equation is  $x^2 + y^2 + 2x - 6y + 7 = 0$ .

8. Find the center and radius of the circle whose equation is  $x^2 + y^2 + 6y + 2 = 0$

9. Find the center and radius of the circle whose equation is  $x^2 + y^2 - 4x + 10y + 13 = 0$ .

10. Find the center and radius of the circle whose equation is  $9x^2 + 12x + 9y^2 - 77 = 0$ .

# Practice

Problems 1-3: Find the center and radius of each circle below.

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

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

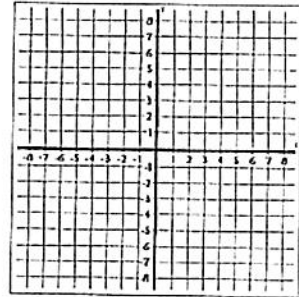
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3.  $(x + 2)^2 + (y - 5)^2 = 1$

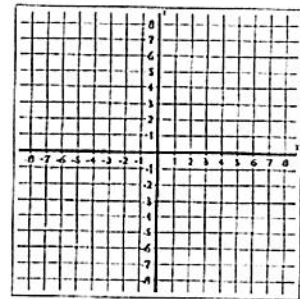
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Problems 4-5: Graph the following.

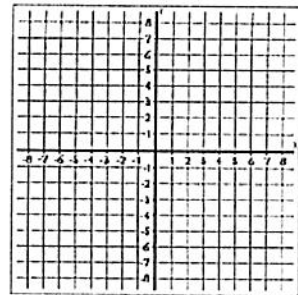
4.  $(x - 1)^2 + (y + 3)^2 = 9$



5.  $x^2 + (y + 2)^2 = 36$



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



7. Write the equation of a circle in standard form that has a radius of 5 and a center at  $(3, -2)$ .

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8. Write the equation of a circle in standard form that has a radius of 2 and a center at  $(-1, -4)$ .

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9. Write the equation of a circle in standard form that passes through the point  $(5, 4)$  and has a center at  $(2, 0)$ .  
*(Draw a picture.)*

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10. Write the equation of a circle whose center is at  $(1, 1)$  that passes through the point  $(4, 5)$ .

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11. Find the radius of a circle with equation:

$$x^2 - 6x + y^2 + 10y = 2$$

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12. Write the equation of the circle in standard form:

$$x^2 - 10x + y^2 - 8y = -32$$

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13. Write the equation of the circle in standard form:

$$x^2 + 4x + y^2 + 6y = 0$$

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14. Write the equation of the circle in standard form:

$$x^2 - 2x + y^2 - 4y - 3 = 0$$

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