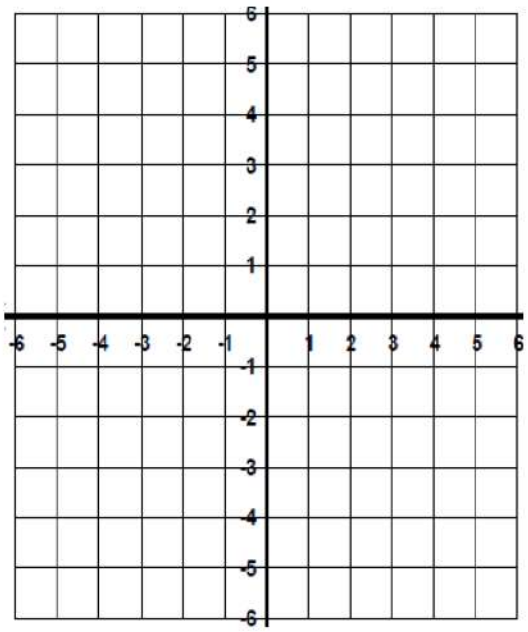
Name: _____ **Date:** _____

Geometry A U4D2 Circles

Warm Up:



On the given grid:

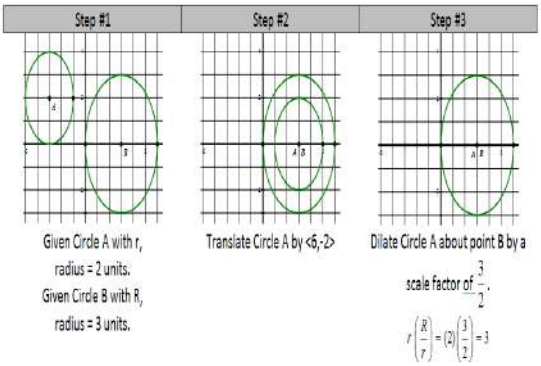
1) Graph the point (3, 4).

2) Draw the vector whose head is that point and tail is the origin.

3) Find the magnitude of that vector. (HINT: use your old notes/power words to help you)

4) Draw every point that is that magnitude from the origin. How many exact coordinates can you find?

5) Below circle A and circle B are graphed. Use words to describe the circles in such detail that someone could graph them using your description.



Circle A: _____

_____

_____

Circle B: _____

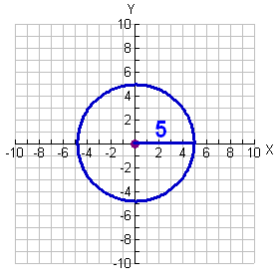
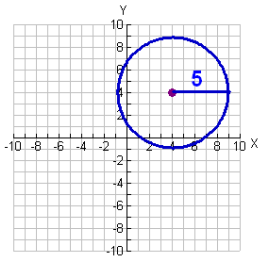
_____

_____

6) Find the area of circle A

7) Find the circumference of circle B

I. Identify center and radius:

Circle with Center at Origin (0,0)	Circle with Center at Point (*h*,*k*)
$x^2 + y^2 = r^2$	$(x-h)^2 + (y-k)^2 = r^2$
 where the center is (0,0)	 where the center is ***(h,k)***
and the radius is ***r***.	and the radius is ***r***
$x^2 + y^2 = 25$	$(x-4)^2 + (y-4)^2 = 25$ center (4,4)
center (0,0)	radius = 5
radius = 5	

Examples Center at (0,0) and radius r: $x^2 + y^2 = r^2$ **:**

a) $x^2 + y^2 = 64$

center (0,0) radius: 8

b) $5x^2 + 5y^2 = 20$

$\frac{5x^2}{5} + \frac{5y^2}{5} = \frac{20}{5}$

$x^2 + y^2 = 4$

center(0,0) radius: 2

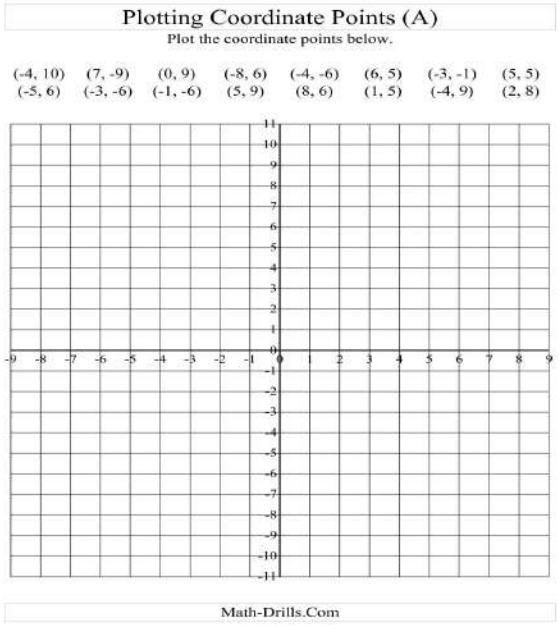
YOU TRY THESE:

1) $x^2 + y^2 = 49$

center (___,___) radius: ____

2) 3

cent



3) Graph both of the following equations on the grid provided and determine the number of solutions (points of intersection):

$x^2 + y^2 = 16$

$y = x^2 + 6x + 9$

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Geometry A U4D2 Circles NOTES

What if the center of the circle is not at the origin??

Examples:

a) $(x+1)^2 + (y-6)^2 = 100$

center (-1, 6) radius: 10

b) $(x-2)^2 + y^2 = 8$

center (2,0) radius: $2\sqrt{2}$

Use the examples above to:

1)Explain in words how to find the center of a circle using its equation:

_____

_____

2) Explain in words how to find the radius of a circle using its equation:

_____

_____

YOU TRY THESE:

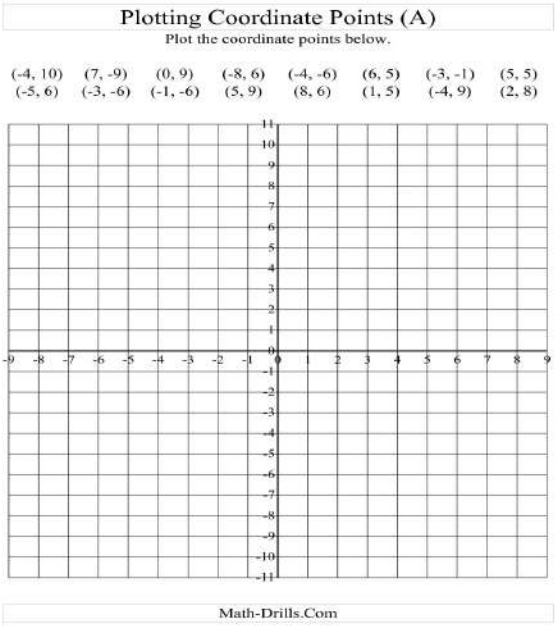
3) $(x-4)^2 + (y+5)^2 = 121$ center (___,___) radius: _____

4) $x^2 + (y-15)^2 = 12$ center (___,___) radius: _____

5) Graph both of the following equations on the grid provided and determine the number of solutions (points of intersection):

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

$x = -2$

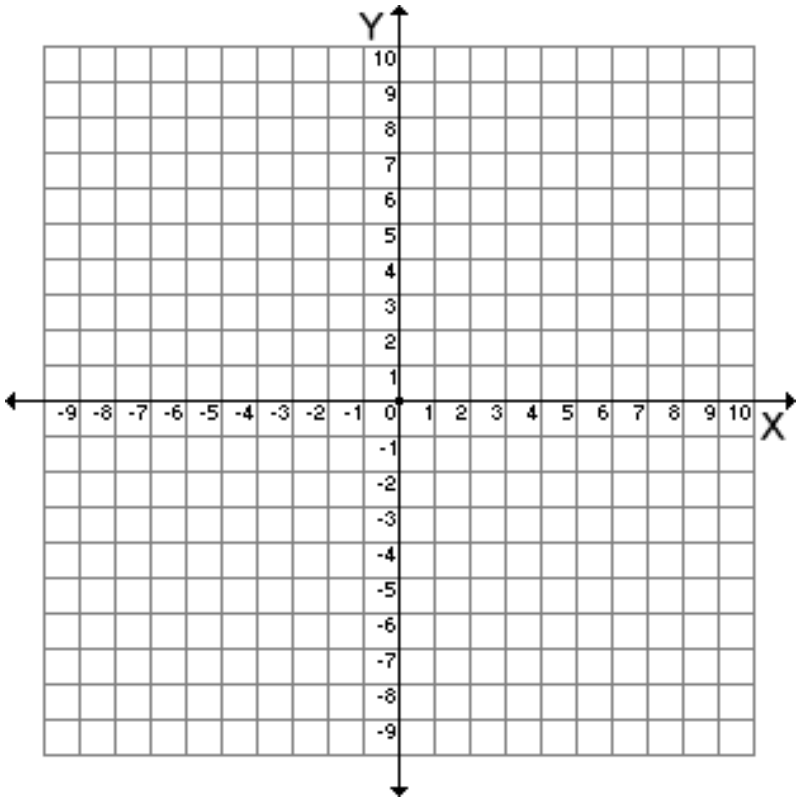


II. Writing the equation of a circle:

If the center of a circle is located at (0, 0) and its radius measures 3 units, then write its equation.

If the center of a circle is located at (-2, 7) and its radius measures 4 units, then write its equation.

If the center of a circle is located at (0, -1) and its radius measures 2 units, then write its equation.



III. Solving a system of equations with a circle:

Determine where the graphs of $x^2 + (y+1)^2 = 25$ and x = 3 intersect by graphing each equation on the same coordinate axis system.

Name:_____

Geometry A **U4D2**

"A circle is round it has no end, that's how long I want to be your friend!"

1) Which of the following equations of a circle has center at (1,-3) and radius of 5?

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

2) $(x-1)^2 + (y+3)^2 = 25$

3) $(x-1)^2 + (y-3)^2 = 25$

4) $(x+1)^2 + (y-3)^2 = 25$

2) What is the equation of a circle whose diameter is 24 and whose center is at the origin?

- $x^2 + y^2 = 24$
- $x^2 + y^2 = 576$
- $x^2 + y^2 = 144$
- $x^2 + y^2 = 64$

3) An ambulance company provides services within an 80 mile radius of their headquarters. If this service area is represented graphically, with the headquarters located at the coordinates (0,0), what is the equation that represents the service area?

- $x^2 + y^2 = 80$
- $(x-0)^2 + (y-0)^2 = 80$
- $x^2 + y^2 = 1600$
- $x^2 + y^2 = 6400$

4) What are the coordinates of the center of this circle? $(x+3)^2 + (y-5)^2 = 16$

Choose:

- (3,5)
- (-3,5)
- (-3,-5)
- (3,-5)

5) What are the coordinates of the center of this circle? $x^2 + (y+7)^2 = 11$

Choose:

- (7,7)
- (0,7)
- (-7,-7)
- (0,-7)

6) The point (1,2) is on the circle whose equation is $(x-2)^2 + (y+1)^2 = 10$

Choose: True or False?

7) The center of a circle represented by the equation $(x-2)^2 + (y+3)^2 = 100$ is located in Quadrant _____.

8) What are the coordinates of the center of the circle represented by the equation $(x+3)^2 + (y-4)^2 = 25$?

Choose:

- (3,4)
- (3,-4)

- (-3,4)
- (-3,-4)

9) What is the equation of a circle with center (-3,1) and radius 7?

Choose:

- $(x-3)^2+(y+1)^2=7$
- $(x-3)^2+(y+1)^2=49$
- $(x+3)^2+(y-1)^2=7$
- $(x+3)^2+(y-1)^2=49$

10) A circle has the equation $(x+1)^2+(y-3)^2=16$

What are the coordinates of its center and the length of its radius?

Choose:

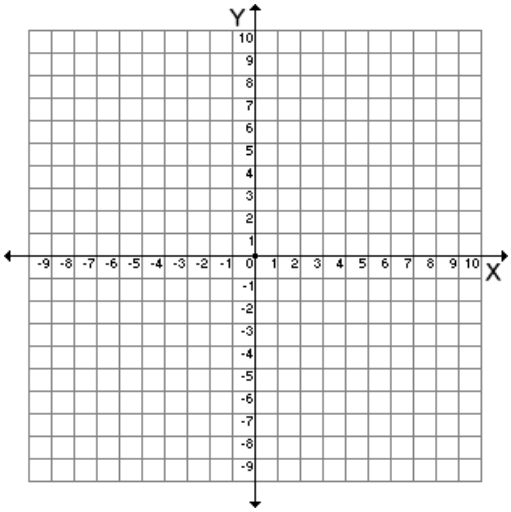
- (-1,3) and 4
- (1,-3) and 4
- (-1,3) and 16
- (1,-3) and 16

Blast from the past:

11) Find the slope of a line which passes through (-3, 6) and (5, 2).

12) Write the equation of a line which is parallel to $y=1$ and passes through (2, 8).

Use the graph!!!



13) Write the slope of a line which is perpendicular to the line: $y=2x+4$.

14) Write the equation of a line which has a slope of 2 and passes through (2, 8).

15) Write the equation of a line which passes through the points (2, 8) and (-3, -1).

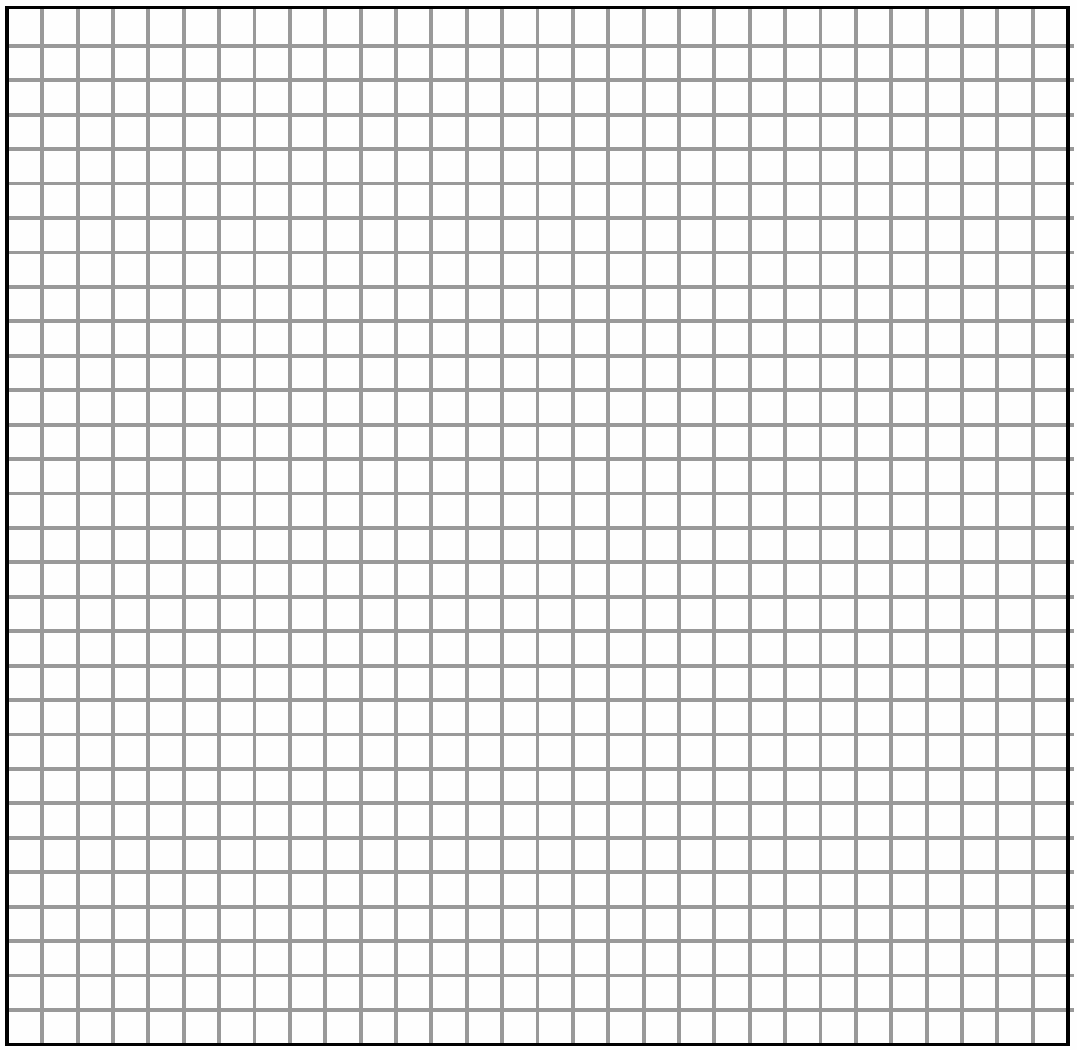
Quadratic Applications:

A rocket is launched from the ground and follows a parabolic path represented by the equation $h = -16t^2 + 96t$. At the same time, a flare is launched from a height of 10 feet and follows a straight path represented by the equation $h = 14t + 10$. Using the accompanying set of axes, graph the equations that represent the paths of the rocket and the flare, and find the coordinates of the point or points where the paths intersect.

Use your calculator to find the answer! Show on the graph below.

Show work: Remember to look at the table for $h = -16t^2 + 96t$ and see how much you need to change your window!

Copy your table!



Find the coordinates of the point or points where the paths intersect.

Name:_____
Geometry A Lesson 4-2 Circle equation

____1) Which is the equation of a circle with a radius of 8 and a center at (-2, 9)?

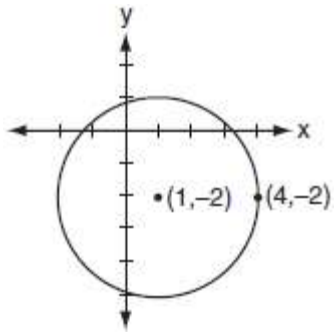
(1) $(x-2)^2+(y-9)^2=8$

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

(3) $(x-2)^2+(y-9)^2=64$

(4) $(x+2)^2+(y-9)^2=64$

_____2) Which equation represents the circle shown in the accompanying graph?



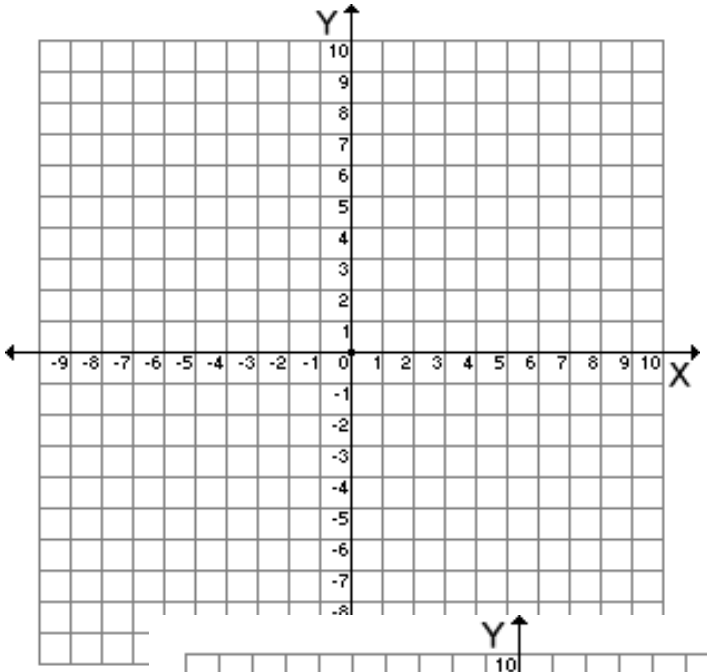
1) $(x-1)^2-(y+2)^2=9$
2) $(x-1)^2+(y+2)^2=9$
3) $(x+1)^2-(y-2)^2=9$
4) $(x+1)^2+(y-2)^2=9$

_____3) Which is an equation of a circle with its center at $(-3,5)$ and a radius of 4?

1) $(x-3)^2+(y+5)^2=16$
2) $(x+3)^2+(y-5)^2=16$
3) $(x-3)^2+(y+5)^2=4$
4) $(x+3)^2+(y-5)^2=4$

4) Identify the radius and center: $(x-4)^2+(y-9)^2=36$

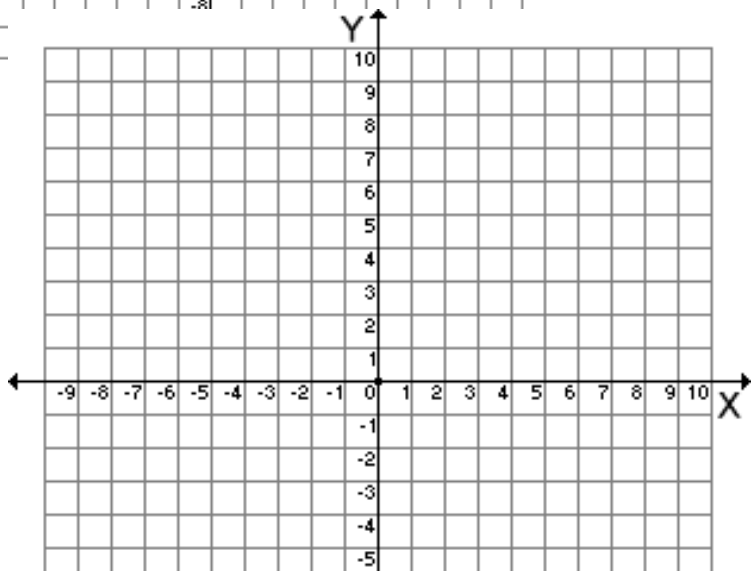
5) Solve graphically:
$x^2+(y-4)^2=9$ and $y=1$



6) Solve graphically:
$y=x^2-12x+36$
$y-x=-4$

Axis of symmetry:

Record a table of values for the parabola:



Solution(s):

Reinforce concepts about a line:

7. What is the slope of the line x + 5y = 9?

A line parallel to this one would have a slope of_____.

A line perpendicular to this one would have a slope of_____.

8. What is the slope of the line that passes through (-1, 4) and (3,-8)?

9. Write an equation that passes through the points (3, 6) and (1,-1).