

Accelerated Geometry  
Rewriting Circle Equations Practice

Name Ray  
Date \_\_\_\_\_

1. Convert each equation to standard form, then find the center and radius of each circle.

a.  $x^2 + 8x + y^2 + 6y = 20$

$$x^2 + 8x + \underline{16} + y^2 + 6y + \underline{9} = -20 + \underline{16} + \underline{9}$$

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

standard form:

center:  $(-4, -3)$  radius:  $\sqrt{5}$

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

$$x^2 + y^2 + 4y + \underline{4} = 3 + \underline{4}$$

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

standard form:

center:  $(0, -2)$  radius:  $\sqrt{7}$

c.  $x^2 + 2x + y^2 + 6y - 30 = 5$

$$x^2 + 2x + \underline{1} + y^2 + 6y + \underline{9} = 35 + \underline{1} + \underline{9}$$

$$(x+1)^2 + (y+3)^2 = 45$$

standard form:

center:  $(-1, -3)$  radius:  $3\sqrt{5}$

d.  $x^2 + 2x + y^2 + 4y - 4 = 0$

$$x^2 + 2x + \underline{1} + y^2 + 4y + \underline{4} = 4 + \underline{1} + \underline{4}$$

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

standard form:

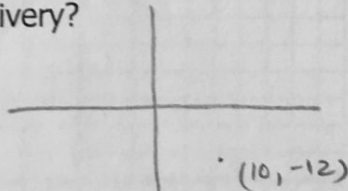
center:  $(-1, -2)$  radius:  $3$

2. A flower shop advertises free delivery up to a 20 mile radius from the store.

a. Write an inequality for the region covered by free delivery.

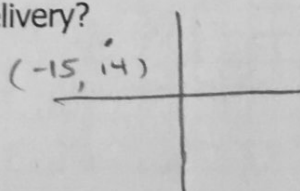
$$x^2 + y^2 \leq 400$$

b. If John lives 10 miles east and 12 miles south of the store, does he qualify for free delivery?



$$\begin{aligned} d &= \sqrt{10^2 + (-12)^2} \\ &= \sqrt{100 + 144} \\ &= \sqrt{244} \end{aligned} \quad \text{yes}$$

c. If Amy lives 15 miles west and 14 miles north of the store, does she qualify for free delivery?



$$\begin{aligned} d &= \sqrt{(-15)^2 + (14)^2} \\ &= \sqrt{225 + 196} \\ &= \sqrt{421} \end{aligned} \quad \text{No}$$