

Directions: Complete the square in each equation below. Write an equation in standard form for each circle. Then, give its center and its radius.

1.) $x^2 + y^2 - 6y = -5$

2.) $x^2 - 8x + y^2 + 2y = 8$

3.) $x^2 + y^2 + 4y = 12$

4.) $x^2 - 2x + y^2 = 80$

5.) $x^2 + 8x + y^2 - 2y = 64$

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

7.) $x^2 + 14x + y^2 - 12y = -4$

8.) $x^2 + 2x + y^2 - 24y = -120$

9.) $x^2 + 2x + y^2 - 10y = 55$

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

11.) MULTIPLE CHOICE Which point does not lie on the circle described by the equation $(x + 2)^2 + (y - 4)^2 = 25$? SHOW WORK!!

- A. (-2, -1) B. (0, 5) C. (3, 4) D. (1, 8)

MORE ON THE BACK!!!!

Directions: Write an equation of a circle in standard form.
(Hint: you might need to use distance and/or midpoint formula)

12.) Center: $(2, -5)$ Point on circle: $(-7, -1)$

13.) Endpoints of a diameter are $(-3, 11)$ and $(3, -13)$

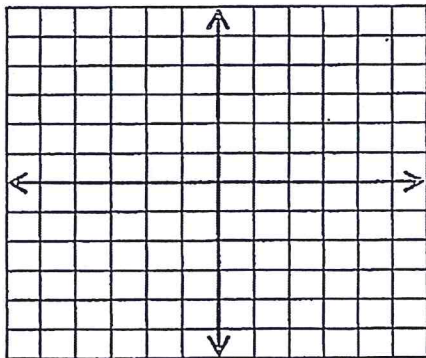
14.) **Earthquakes** After an earthquake, you are given seismograph readings from three locations, where the coordinate units are miles.

At $A(-1, -1)$, the epicenter is 2 miles away.

At $B(1, 2)$, the epicenter is 3 miles away.

At $C(2.5, -2.5)$, the epicenter is 2 miles away.

- a. Graph three circles in one coordinate plane to represent the possible epicenter locations determined by each of the seismograph readings.



- b. What are the coordinates of the epicenter?

- c. People could feel the earthquake up to 7 miles from its epicenter.
Could a person at $(-5, 3)$ feel it? *Explain in words or use a formula to explain.*