Circles
You will need these formulas for this worksheet.

Standard Form of a Circle: $(x-h)^2 + (y-k)^2 = r^2$

Midpoint Formula: $\left(\dfrac{x_1+x_2}{2}, \dfrac{y_1+y_2}{2}\right)$

Distance Formula: $d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

1. Find the equation of a circle where the center is at (5,-3), and a radius of 5 units.

2. Find the equation of a circle where the center is at (-6,4), and a radius of 8 units.

3. Find the equation of a circle where the center is at (5,0), and a radius of $4\sqrt{2}$ units.

4. Find the equation of a circle where the center is at (2,-4), and the point (6,1) rests on the circle.

5. Find the equation of a circle where the center is at (-2,3), and the point (1,4) rests on the circle.

6. Find the equation of a circle that has a diameter with endpoints of (-3,5) and (5,-9).

7. Find the equation of a circle that has a diameter with endpoints of (-1,-4) and (7,3).

Write each of the following in standard form. Identify the center of the circle as well as the length of the radius, the graph the circle if possible.

8. $x^2 + y^2 + 10x - 4y + 13 = 0$

9. $x^2 + y^2 + 6y - 16 = 0$

10. $x^2 + y^2 - 4x - 8y + 11 = 0$

11. $x^2 + y^2 + 6x - 8y + 29 = 0$

12. $x^2 + y^2 - 8x - 20 = 0$

13. $2x^2 + 2y^2 + 4x - 12y + 2 = 0$

14. $3x^2 + 3y^2 + 36x + 30y + 171 = 0$