GSE Geometry Unit 5

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| **LO5.7 I can complete the square to find the center and radius of a circle given by an equation.** |
| Key Points:Standard form of the equation of a Circle: $(x-h)^{2}+(y-k)^{2}=r^{2}$If $(x,y)$ is the center of a circle, it is used as $(h,k)$. For example, a circle with a center at $(3, 4)$ with a radius of 5 would be written as: $(x-3)^{2}+(y-4)^{2}=25$General form of a circle equation: $x^{2}+y^{2}+Dx+Ey+F=0$ , where D,E,F are constants |
| **Examples: Write the equation of the circle in standard form.**1. Center: (5, 9) Radius: 6 Now, let’s convert this to general form (\*hint: multiply everything out)**Convert the equation for the circle from general to standard form (completing the square).**2. $x^{2}+y^{2}-4x-10y-115=0$3. $2x^{2}+2y^{2}+12x+8y-5=0$ |

Work Time:

**Write the equation of the circle in standard form.**

1) Center: $(-10,-11)$ 2) Center: $(13, 9)$

 Radius: 7 Radius: 6

**Convert each equation from #1-2 into general form.**

1. 2.

**Convert each equation to standard form.**

3. **4x2 + 4y2 + 5x + 8y – 2 = 0** 4. **5x2 + 5y2 - 15x + 10y – 1 = 0**