Name ___Key___

# Circles: Writing in Standard form

**Write its equation in standard form**

1) $x^2 + y^2 + 6x + 8y + 24 = 0$

$x^2 + 6x + \underline{9} + y^2 + 8y + \underline{16} = -24 + \underline{9} + \underline{16}$

$\frac{6}{2} = 3 \quad (x+3)^2 + (y+4)^2 = 1$

$3^2 = 9$

$\frac{8}{2} = 4$

$4^2 = 16$

2) $x^2 + y^2 - 2x - 4y - 9 = 0$

$x^2 - 2x + \underline{1} + y^2 - 4y + \underline{4} = 9 + \underline{1} + \underline{4}$

$(x-1)^2 + (y-2)^2 = 14$

3) $x^2 + y^2 - 8x - 4y + 16 = 0$

$x^2 - 8x + \underline{16} + y^2 - 4y + \underline{4} = -16 + \underline{16} + \underline{4}$

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

4) $x^2 + y^2 - 6x - 2y - 5 = 0$

$x^2 - 6x + \underline{9} + y^2 - 2y + \underline{1} = 5 + \underline{9} + \underline{1}$

$(x-3)^2 + (y-1)^2 = 15$

5) $x^2 + y^2 + 8x + 2y + 8 = 0$

$x^2 + 8x + \underline{16} + y^2 + 2y + \underline{1} = -8 + \underline{16} + \underline{1}$

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

6) $x^2 + y^2 - 4x + 8y + 11 = 0$

$x^2 - 4x + \underline{4} + y^2 + 8y + \underline{16} = -11 + \underline{4} + \underline{16}$

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

7) $x^2 + y^2 - 2x + 8y + 8 = 0$

$x^2 - 2x + \underline{1} + y^2 + 8y + \underline{16} = -8 + \underline{1} + \underline{16}$

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

8) $x^2 + y^2 - 6x - 6y + 13 = 0$

$x^2 - 6x + \underline{9} + y^2 - 6y + \underline{9} = -13 + \underline{9} + \underline{9}$

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

9) $x^2 + y^2 - 4x - 8y + 15 = 0$

$x^2 - 4x + \underline{4} + y^2 - 8y + \underline{16} = -15 + \underline{4} + \underline{16}$

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

10) $x^2 + y^2 - 2x - 4y - 16 = 0$

$x^2 - 2x + \underline{1} + y^2 - 4y + \underline{4} = 16 + \underline{1} + \underline{4}$

$(x-1)^2 + (y-2)^2 = 21$