

Cut out these cards

1. $x^2 - 6x + y^2 + 4y + 4 = 0$	$(x + 1)^2 + (y + 5)^2 = 4$
$(x + 10)^2 + (y - 9)^2 = 64$	3. $x^2 + 4x + y^2 - 8y - 16 = 0$
$x^2 + y^2 - 14y + 49 = -38 + 49$	$(x - 3)^2 + (y + 2)^2 = 9$
$x^2 + 2x + y^2 + 10y = -22$	5. $x^2 + 20x + y^2 - 18y + 117 = 0$
$x^2 + 20x + y^2 - 18y = -117$	$x^2 + 4x + 4 + y^2 - 8y + 16 = 16 + 4 + 16$
2. $x^2 + 2x + y^2 + 10y + 22 = 0$	$x^2 + y^2 - 14y = -38$
$(x - 5)^2 + (y + 4)^2 = 8$	$x^2 - 6x + y^2 + 4y = -4$
$x^2 + 4x + y^2 - 8y = 16$	$x^2 + (y - 7)^2 = 11$
$x^2 + 20x + 100 + y^2 - 18y + 81 = -117 + 100 + 81$	$x^2 + 2x + 1 + y^2 + 10y + 25 = -22 + 1 + 25$
$x^2 - 6x + 9 + y^2 + 4y + 4 = -4 + 9 + 4$	$x^2 - 10x + y^2 + 8y = -33$
6. $x^2 - 10x + y^2 + 8y + 33 = 0$	$(x + 2)^2 + (y - 4)^2 = 36$
4. $x^2 + y^2 - 14y + 38 = 0$	$x^2 - 10x + 25 + y^2 + 8y + 16 = -33 + 25 + 16$

Place the numbered cards in the numbered slots on the chart. Use the other cards to correctly complete the square and find the equation of each circle.

1.	2.
3.	4.
5.	6.

After finding the equation of each circle, list the center and radius for each.

- | | |
|-----------------|--------------|
| 1. Center _____ | Radius _____ |
| 2. Center _____ | Radius _____ |
| 3. Center _____ | Radius _____ |
| 4. Center _____ | Radius _____ |
| 5. Center _____ | Radius _____ |
| 6. Center _____ | Radius _____ |