

Name: _____

Completing the Square Practice

Use completing the square to write the equations in Vertex Form.

1. $f(x) = x^2 - 6x + 8$

2. $g(x) = 4x^2 + 24x + 20$

3. $h(x) = x^2 + 2x - 3$

Vertex: _____

Vertex: _____

Vertex: _____

4. $k(x) = -x^2 - 8x - 7$

5. $m(x) = -3x^2 + 24x - 21$

6. $n(x) = x^2 + 8x + 7$

Vertex: _____

Vertex: _____

Vertex: _____

7. $f(x) = -x^2 + 6x - 8$	8. $g(x) = -5x^2 + 10x + 15$	9. $h(x) = 6x^2 - 12x + 4$
Vertex: _____	Vertex: _____	Vertex: _____

Each equation form gives you two important details about a quadratic.

Standard Form tells you: 1. Where the **Y-INTERCEPT** is located and 2. If the parabola will face **UP or DOWN**.

Factored Form tells you: 1. Where the **X-INTERCEPTS** are located and 2. If the parabola will face **UP or DOWN**.

Vertex Form tells you: 1. Where the **VERTEX** is located and 2. If the parabola will face **UP or DOWN**.

Notice that every form tells you the direction of the parabola. Here's how:

If the first term (A) is **POSITIVE**, then the graph will face UP.

If the first term (A) is **NEGATIVE**, then the graph will face down.

Standard Form: $Ax^2 + bx + c$

Factored Form: $A(x - r_1)(x - r_2)$

Vertex Form: $A(x - h)^2 + k$

10. $f(x) = -3x^2 + 6x - 4$	11. $g(x) = 2(x + 5)(x - 1)$	12. $h(x) = -(x + 5)^2 + 3$
Will the graph face up or down?	Will the graph face up or down?	Will the graph face up or down?
Does the graph have a maximum or a minimum?	Does the graph have a maximum or a minimum?	Does the graph have a maximum or a minimum?
13. $f(x) = -(x - 9)(x + 4)$	14. $g(x) = 8(x + 2)^2 - 7$	15. $h(x) = x^2 - 3x - 9$
Will the graph face up or down?	Will the graph face up or down?	Will the graph face up or down?
Does the graph have a maximum or a minimum?	Does the graph have a maximum or a minimum?	Does the graph have a maximum or a minimum?