Unit 8 Test Study Guide
(Quadratic Equations)

Name: _____

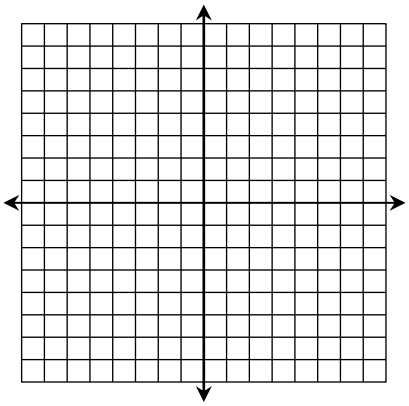
Date: _____ Per: _____

Topic 1: Graphing Quadratic Equations (from Standard Form and Vertex Form)

Graph each equation using a table of values. Identify all key characteristics.

1. $y = x^2 - 2x - 5$

x	y

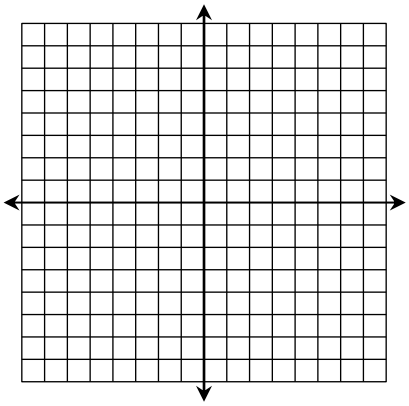


Axis of Symmetry: **Vertex:**

Domain: **Range:**

2. $y = -x^2 + 10x - 28$

x	y

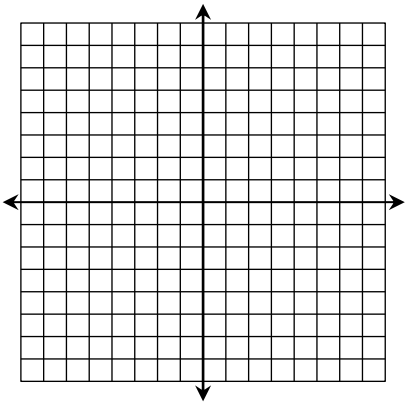


Axis of Symmetry: **Vertex:**

Domain: **Range:**

3. $y = 2x^2 + 4x$

x	y

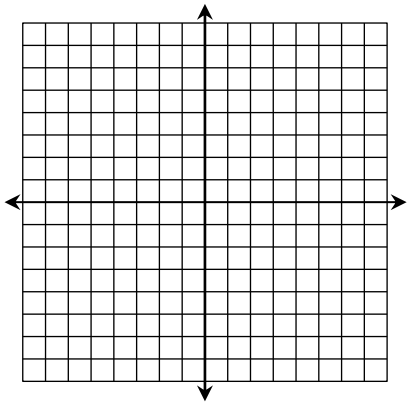


Axis of Symmetry: **Vertex:**

Domain: **Range:**

4. $y = -x^2 + 7$

x	y

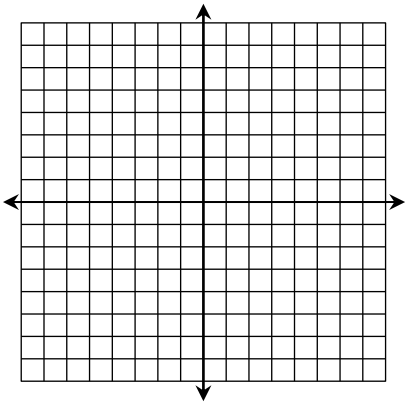


Axis of Symmetry: **Vertex:**

Domain: **Range:**

5. $y = (x+3)^2 - 8$

x	y

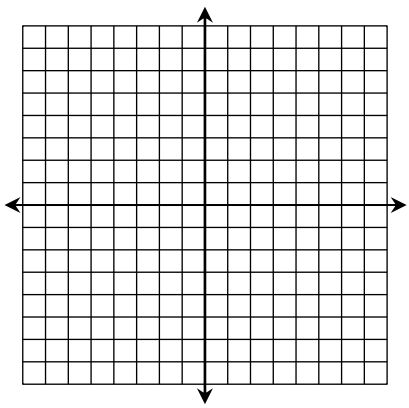


Axis of Symmetry: **Vertex:**

Domain: **Range:**

6. $y = -3(x-1)^2$

x	y



Axis of Symmetry: **Vertex:**

Domain: **Range:**

Topic 2: Vertex Form & Transformations

Describe the transformations from the parent function given each equation.

7. $y = -x^2 + 6$

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

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

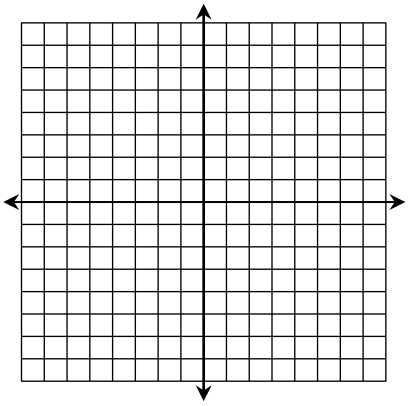
10. If the graph of the function $y = x^2$ is reflected over the x-axis, then translated two units left, write an equation to represent the function.

11. If the graph of the function $y = x^2$ is vertically compressed by a factor of ¼, then translated seven units right and one unit down, write an equation to represent the function.

Topic 3: Quadratic Roots (Zeros)

Graph each function, identify the zeros, then write the equation in factored form, if possible.

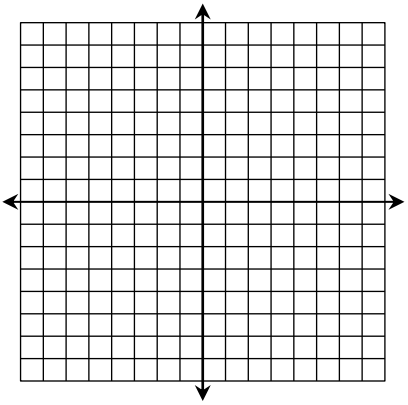
12. $y = x^2 + 8x + 15$



Zeros:

Factored Form:

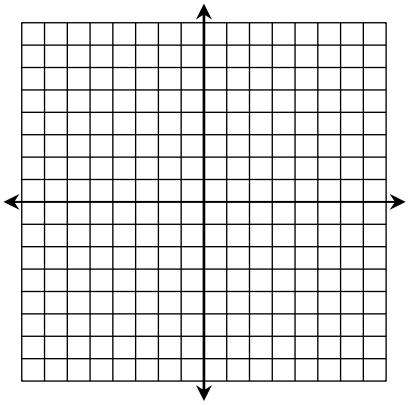
13. $y = -2x^2 + 8x - 8$



Zeros:

Factored Form:

14. $y = -x^2 - 1$



Zeros:

Factored Form:

Write each equation in factored form. Then, identify the zeros.

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

Factored Form:

Zeros:

16. $y = 2(x-3)^2 - 18$

Factored Form:

Zeros:

17. $y = -(x+5)^2 + 9$

Factored Form:

Zeros:

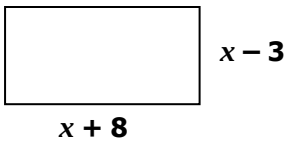
Find the discriminant of each equation. Then, determine the number of solutions.		
18. $y = -x^2 + 7x - 15$ ❑ 2 ❑ 1 ❑ ∅	**19.** $y = 3x^2 - 12x$ ❑ 2 ❑ 1 ❑ ∅	**20.** $y = x^2 - 20x + 100$ ❑ 2 ❑ 1 ❑ ∅

Topic 4: Solving Quadratic Equations

Solve each equation. Simplify all irrational solutions.	
21. $x^2 + 4x - 45 = 0$	**22.** $2x^2 - 9 = 39$
23. $x^2 - 10x - 3 = 0$	**24.** $16x^2 = 10x$
25. $3x^2 - 8x - 8 = 0$	**26.** $-x^2 + 3x = x - 19$

27. $x^2 - 2x - 17 = 0$	**28.** $6x^2 = 7x + 5$
29. $2x^2 + 19 = 1 - 20x$	**30.** $25x^2 + 1 = 5$
31. $\frac{1}{2}x^2 - 42 = 8$	**32.** $x^2 + 9x + 13 = 4$

Topic 5: Area and Consecutive Integer Problems

33. If the area of the rectangle below is 42 inches squared, find the value of x.  **$x - 3$** **$x + 8$**	**34.** The length of a rectangle is five feet less than its width. If the area of the rectangle is 84 square feet, find its dimensions.