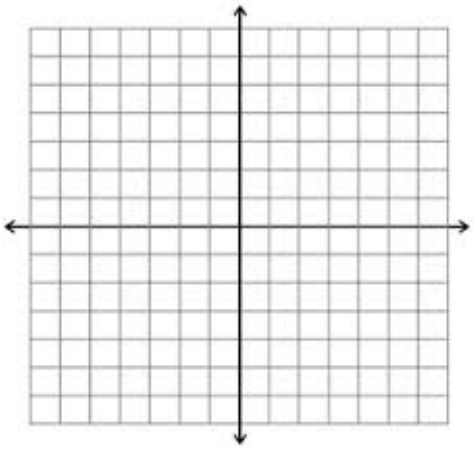
Name:_____ Date:_____
Algebra 1 Band:_____

Unit 9: Quadratic Functions & Equations Study Guide

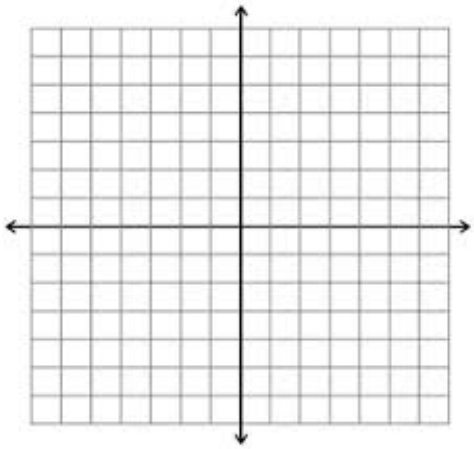
LT#1: Graph quadratic functions of the form $y = ax^2$ and $y = ax^2 + c$.
LT#2: Graph quadratic functions of the form $y = ax^2 + bx + c$.

Graph each function. Label the axis of symmetry and the vertex.

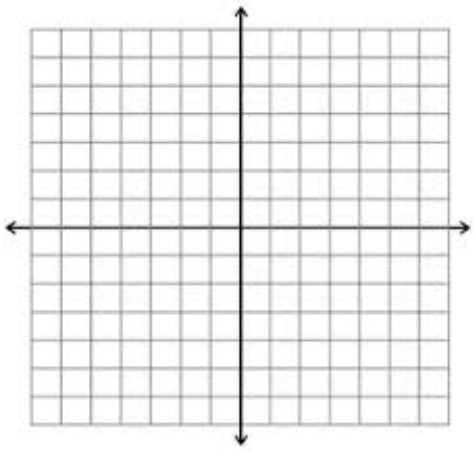
1. $y = \frac{2}{3}x^2$



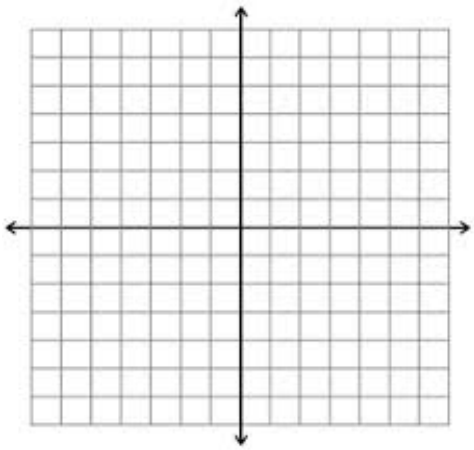
2. $y = -x^2 + 1$



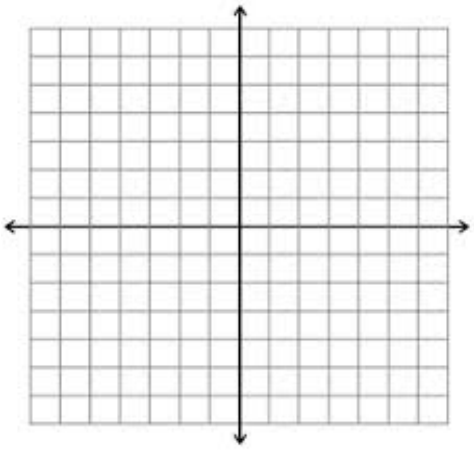
3. $y = x^2 - 4$



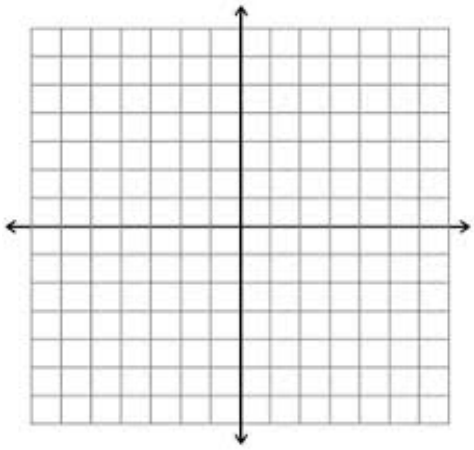
4. $y = 5x^2 + 8$



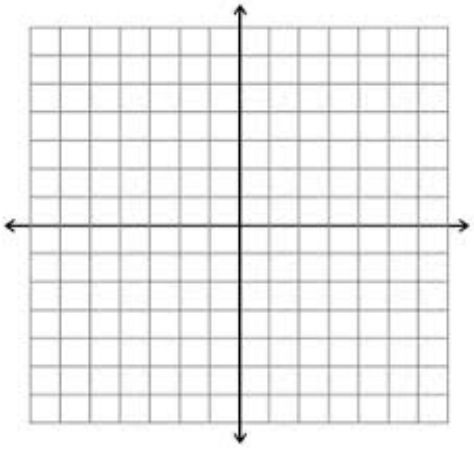
5. $y = -\frac{1}{2}x^2 + 4x + 1$



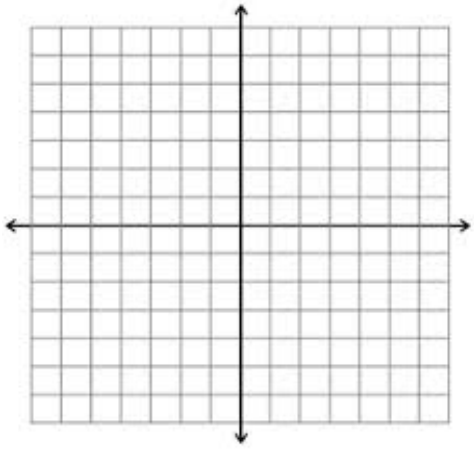
6. $y = -2x^2 - 3x + 10$



7. $y = \frac{1}{2}x^2 + 2x - 3$



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



Given an example of a quadratic function that matches each description.

9. Its graph opens downward

10. The vertex of its graph is at the origin

11. Its graph opens upward

12. Its graph is wider than the graph of $y = x^2$

LT#3: Solve quadratic equations by graphing and using square roots.

Solve each equation. If the equation has no real-number solution, *write no solution*.

13. $6(x^2 - 2) = 12$

14. $-5m^2 = -125$

15. $9(w^2 + 1) = 9$

16. $3r^2 + 27 = 0$

17. $4 = 9k^2$

18. $4n^2 = 64$

LT#4: Solve quadratic equations by factoring.

Solve by factoring.

19. $x^2 + 7x + 12 = 0$

20. $5x^2 - 10x = 0$

21. $2x^2 - 9x = x^2 - 20$

22. $2x^2 + 5x = 3$

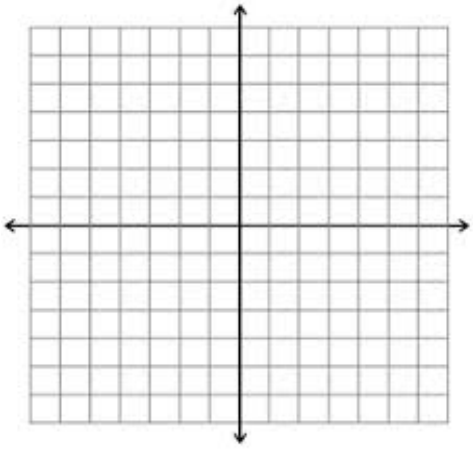
23. $3x^2 - 5x = -3x^2 + 6$

24. $x^2 - 5x + 4 = 0$

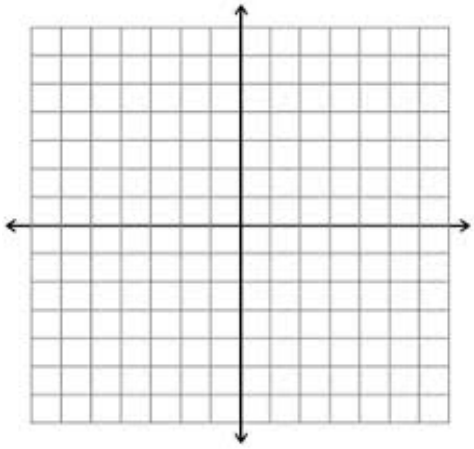
LT#5: Choose a linear, quadratic, or exponential model for data.

Graph each set of points. Which model is most appropriate for each data set.

25. $(-3,0), (1,4), (-1,6), (2,0)$



26. $(0,6), (5,2), (1,4), (8,1.5), (2,3)$



Write an equation to model the data.

27.

x	y
−1	−5
0	−2
1	1
2	4
3	7

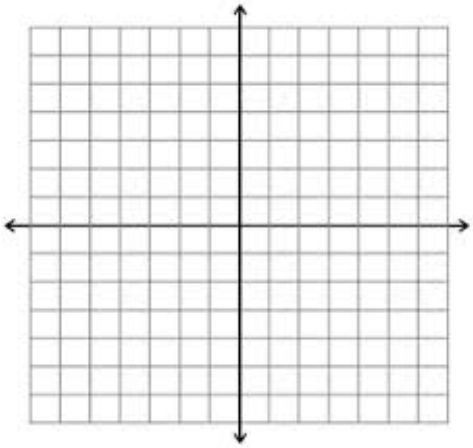
28.

x	y
−1	2.5
0	5
1	10
2	20
3	40

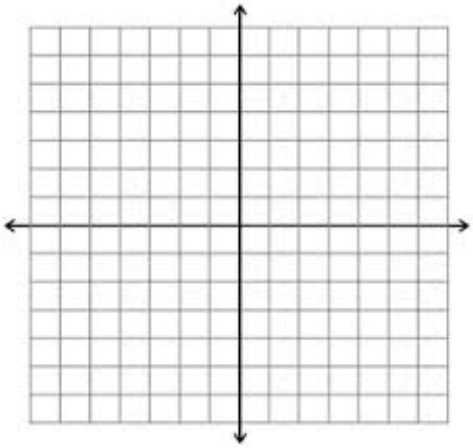
LT#6: Solve systems of linear and quadratic equations.

Solve each system by graphing.

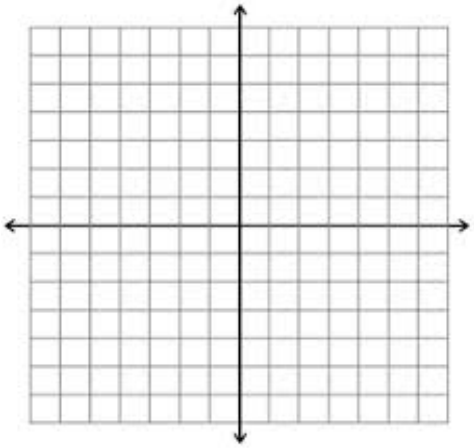
29. $y = x^2 - 4x + 3$
$y = -3x + 5$



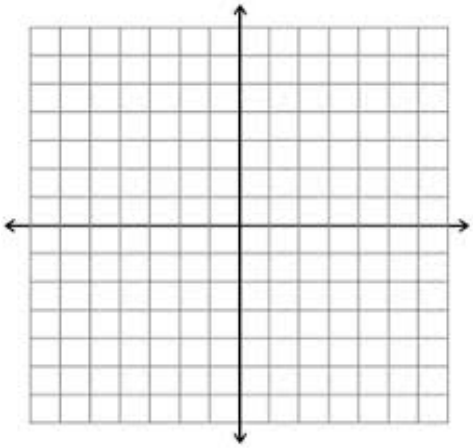
30. $y = x^2 - 2x - 1$
$y = -x - 1$



31. $y = -2x^2 + x + 2$
$y = x$



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



Solve each system algebraically.

33. $y = x^2 + 2x - 45$
$y = 6x + 51$

34. $y = x^2 - 12x + 33$
$y = 4x - 30$

35. $y = x^2 + 19x + 39$
$y - 11 = 8x$

36. $y = x^2 + 5x - 40$
$y + 1 = -5x$

37. $y = x^2 + 3x + 15$
$y + 45 = 19x$

38. $y = x^2 + 11x + 51$
$y = -10x - 57$

39. Explain how you can use graphing to determine the number of solutions of a system of linear and quadratic equations.