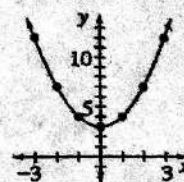


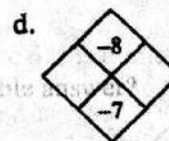
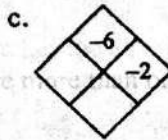
# HW Functions 1.1.3

1-25. Freda Function has another quadratic function for you to investigate! Graph the equation  $y = x^2 + 3$  and then answer the questions from problem 1-23.



- How would you describe the shape of your parabola? For example, would you describe your parabola as opening up or down? Do the sides of the parabola ever go straight up or down (vertically)? Why or why not? Is there anything else special about its shape?
- Does your parabola have any **lines of symmetry**? That is, can you fold the graph of your parabola so that each side of the fold exactly matches the other? If so, where would the fold be? Do you think this works for all parabolas? Why or why not? For more information on lines of symmetry, see the Math Notes box at the end of this lesson.
- Are there any special points on your parabola? Which points do you think are important to know?
- Are there  $x$ - and  $y$ -intercepts? What are they? Are there any intercepts that you expected but do not exist for your parabola?
- Is there a highest (maximum) or lowest (minimum) point on the graph of your parabola? If so, where is it? This point is called a **vertex**.

1-26. Copy these Diamond Problems and use the pattern you discovered earlier, shown at right, to complete each of them. Some of these may be challenging!



1-27. Copy the figure at right onto your paper. Then draw any lines of symmetry.



1-28. Solve the equations below for  $x$  and check your solutions.

a.  $-3 + 2x = -x + 6$

b.  $5 - 3x = x + 1$

c.  $-2x = 4x + 9$

d.  $4x + 3 = x$

1-29. Mr. Guo is thinking of a number. When he takes the absolute value of his number, he gets 15. What could his number be? Is there more than one possible answer?



## CW Functions 1.1.3

1-23. *Problem continued from previous page.*

**Your Task:** Your team will be assigned its own quadratic function to study. Investigate your team's function and be ready to describe everything you can about it by using its graph (which is in the shape of a parabola), equation, and table. Answer the questions below to get your investigation started. You may answer them in any order; however, do not limit yourselves to these questions!

- How would you describe the shape of your parabola? For example, would you describe your parabola as opening up or down? Do the sides of the parabola ever go straight up or down (vertically)? Why or why not? Is there anything else special about its shape?
- Does your parabola have any **lines of symmetry**? That is, can you fold the graph of your parabola so that each side of the fold exactly matches the other? If so, where would the fold be? Do you think this works for all parabolas? Why or why not? For more information on lines of symmetry, see the Math Notes box at the end of this lesson.
- Are there any special points on your parabola? Which points do you think are important to know?
- Are there  $x$ - and  $y$ -intercepts? What are they? Are there any intercepts that you expected but do not exist for your parabola?
- Is there a highest (maximum) or lowest (minimum) point on the graph of your parabola? If so, where is it? This point is called a **vertex**.

**List of Quadratic Functions:**

$$y = x^2 - 2x - 8$$

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

$$y = x^2 - 6x + 5$$

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

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

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

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

$$y = x^2 + 5x + 1$$