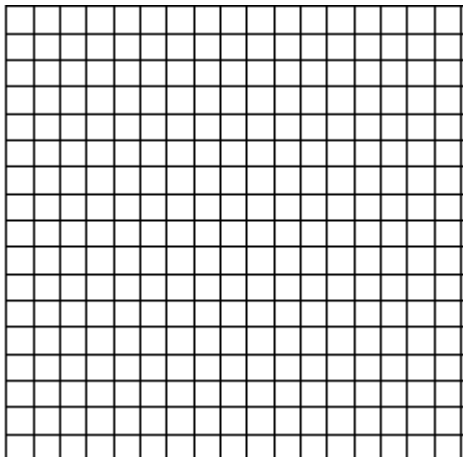# 2.5 Lining Up Quadratics
A Solidify Understanding Task

Graph each function and find the vertex, the
y-intercept and the *x*-intercepts. Be sure to properly
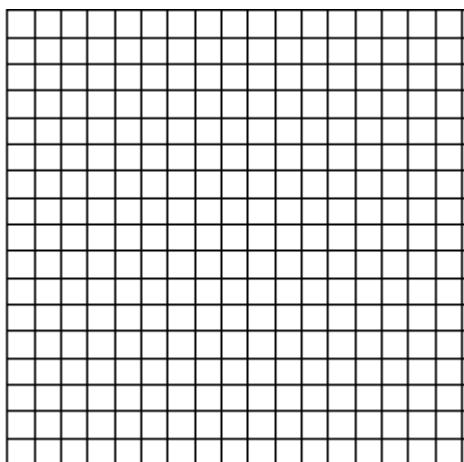write the intercepts as points.

1. $y = (x - 1)(x + 3)$

Line of Symmetry _____

Vertex _____

x-intercepts _____   _____

y-intercept _____
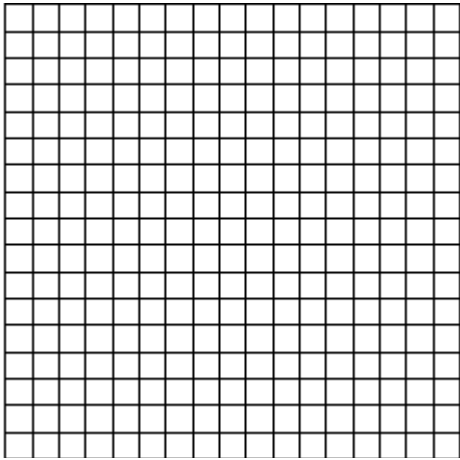
2. $f(x) = 2(x - 2)(x - 6)$

Line of Symmetry _____

Vertex _____

x-intercepts _____   _____

y-intercept _____

3. $g(x) = -x(x + 4)$

Line of Symmetry _____

Vertex _____

x-intercepts _____   _____

y-intercept _____

4. Based on these examples, how can you use a quadratic function in factored form to:
    a. Find the line of symmetry of the parabola?

    b. Find the vertex of the parabola?

    c. Find the x-intercepts of the parabola?

    d. Find the y-intercept of the parabola?

    e. Find the vertical stretch?

5. Choose any two **linear** functions and write them
    in the form: $f(x) = m(x - c)$, where m is the
    slope of the line.   Graph the two functions.

    Linear function 1:

    Linear function 2:
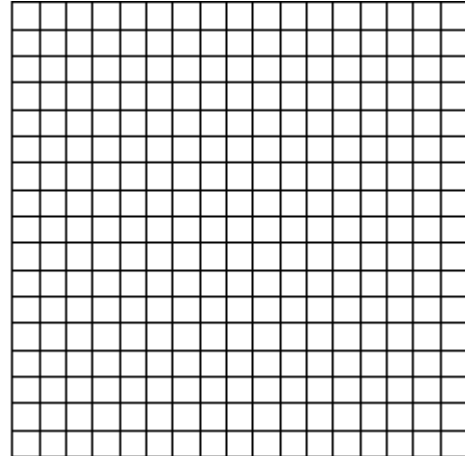
6. On the same graph as #5, graph the function $P(x)$ that is the product of the two linear
    functions that you have chosen. What shape is created?

7. Describe the relationship between x-intercepts of the linear functions and the x-intercepts
    of the function $P(x)$. Why does this relationship exist?

8. Describe the relationship between y-intercepts of the linear functions and the y-intercepts
    of the function $P(x)$. Why does this relationship exist?

9. Given the parabola to the right, sketch two lines that could represent its linear factors.
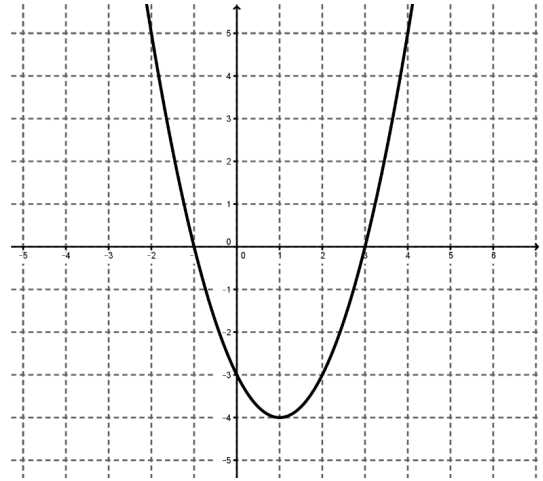
10. Write an equation for each of these two lines.

11. How did you use the *x* and *y* intercepts of the parabola to select the two lines?

12. Are these the only two lines that could represent the linear factors of the parabola? If so, explain why. If not, describe the other possible lines.

13. Use your two lines to write the equation of the parabola. Is this the only possible equation of the parabola?