Making a Connection Between Zeros and the Vertex of a Parabola

Use a graph and your calculator's table function to approximate the roots of $0=x^2 - 2x - 8$ by placing $y1= x^2 - 2x - 8$.

Roots: x = _____ and x = _____

Create a graph of y1. The vertical line through the vertex that cuts a parabola into two mirror images is called the line of symmetry. From the roots, find the vertex and the line of symmetry.

Find the equation of the line of symmetry, and find the coordinates (h, k) of the vertex of the parabola $y=x^2 -2x - 8$. Then write the equation in the form $y=a(x - h)^2 + k$.

Enter the equation into Y2 and graph it. How does it compare to Y1? Confirm you conjecture by looking at a set of table values for Y1 and Y2. What does the table show you?

Do you need to move your vertex closer or further from the x-axis?
Do you need a stretching or shrinking factor?
Write your equation:

VERTEX FORM

Write the equation of the parabola in vertex form. The form is $y = a(x-h)^2+k$.

What is the stretching factor?

What is the vertex?

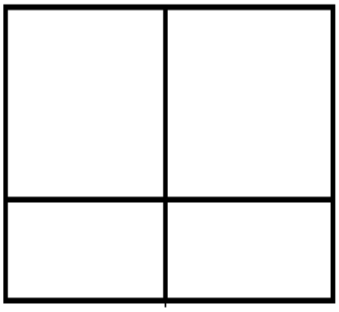
What is the equation of the parabola in vertex form?

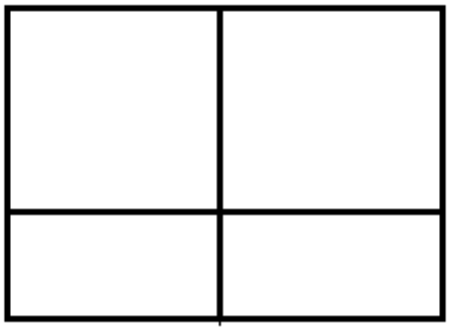
GENERAL FORM

Expand either form to find the general form.

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

$y = 2(x+3)(x-1)$





What can you tell from each form?