Graphing Quadratics - Vertex Form - Day 1 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

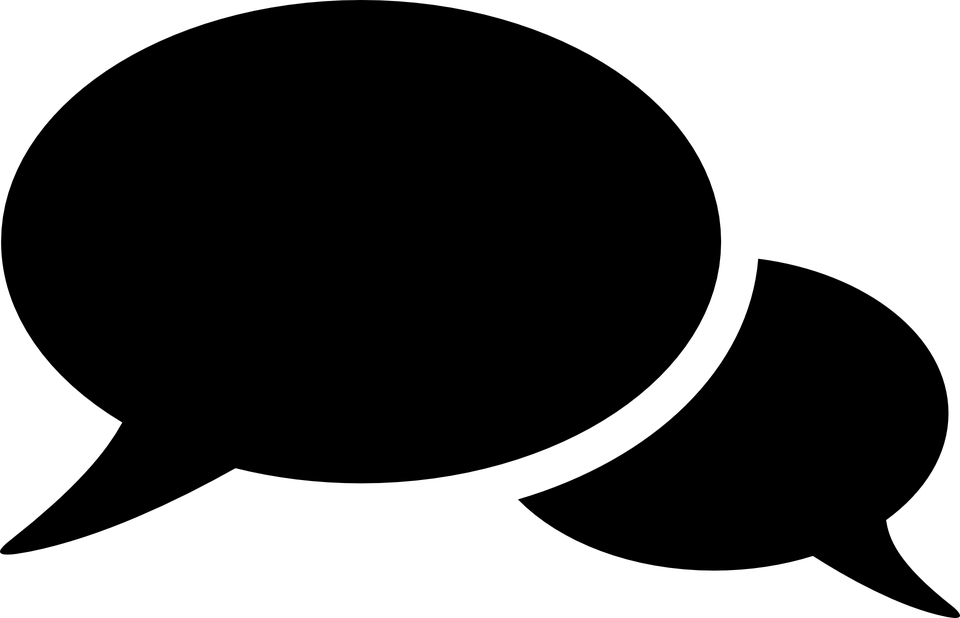
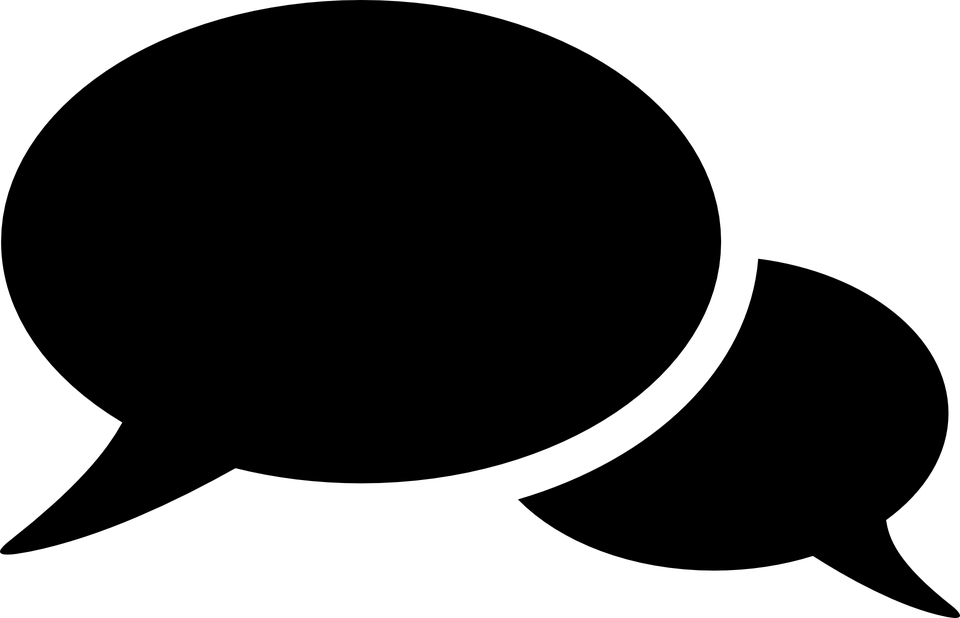
Learning Goals:

|  |  |  |
| --- | --- | --- |
| Identify the location of the vertex, V(h, k) from the equation. | Identify the vertex, V(h,k) from a graph. | Describe the effect ***a*** has on the function if a = 1, a > 1, a < 0 (negative) , or a = 0. |

Quadratic Parent Function: y equals x squared⁣ Vertex form of a Quadratic: y equals a. times open paren x minus h close paren squared plus k⁣

Phet Link: <https://phet.colorado.edu/en/simulation/graphing-quadratics>

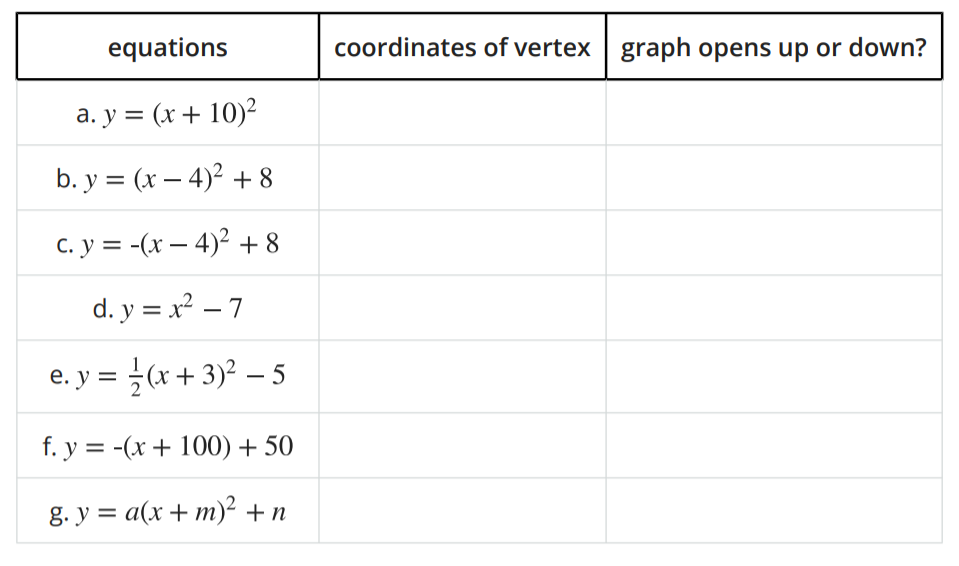
1. **Open Play**: Once you have opened the Graphing Quadratics Phet simulator, go to the 3rd screen vertex form. Take some time to play around with it.
2. What information does a quadratic expression in the vertex form reveal? How does it show that information?
3. What doesn’t it tell us?
4. Why do you think this form is used?

** Compare your results from questions 2-4 with your partner **

1. Using PhET again, complete the following table to describe what the ***a, h and k*** values do to the parent function.

|  |  |  |  |
| --- | --- | --- | --- |
| **a, h & k** | **Describe the effect (transformation) if any.** | **Example Equation** | **Vertex V(h, k)** |
| a = 1 |  |  |  |
| a > 1 (positive) |  |  |  |
| a = 0 |  |  |  |
| a < 0 (negative) |  |  |  |
| **a, h & k** | **Describe the effect (transformation) if any.** | **Example Equation** | **Vertex V(h, k)** |
| h > 0 (positive) |  |  |  |
| h < 0 (negative) |  |  |  |
| h = 0 |  |  |  |
| k > 0 (positive) |  |  |  |
| k < 0 (negative) |  |  |  |
| k = 0 |  |  |  |

**PREDICT**: Without graphing, predict the coordinates of the vertex of the graphs of these quadratic functions, and predict whether the graph is a U shape (“opens up”) or an upside-down U (“opens down”).



SUMMARIZE:

* When a quadratic equation is in vertex form of ***y = (x-h)2 + k***, the coordinates of the vertex are \_\_\_\_\_\_\_\_\_\_.
* When the equation is graphed, the graph opens upward if . . .
* The graph opens downward if . . .