**Quadratic Graph Project**

1. Go onto the internet and find a digital copy of a picture which has a parabolic shape in it.
2. Copy it
3. Open Smartnotebook and paste the picture
4. Click this icon  and type “xy grid”; Click pictures(1) and drag the grid over top your picture. **Neither axis may go through the vertex of the parabola.**
5. Using either the pen tool or the circle tool, create a point on the vertex of the parabola.

and label another 4 points on your graph.

1. Use a digital format to paste your picture.ie word document; Powerpoint or Prezi.
2. Use the snipping tool located when you press  to capture your grid and picture
3. Copy it and place it into your document.
4. Label the vertex using points which are appropriate.
   1. Vertex:\_\_\_\_\_\_\_\_\_\_\_\_
5. Label another co-ordinate on the graph.
   1. Point:\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Using your vertex and co-ordinate you created, determine the value of *a*, either as a fraction or a whole number, if your parabola was written in the form. Show your work using any digital format.
   1. 
7. Label another 4 points on your graph. Try to space out the co-ordinates evenly across the parabola.
   1. Point 1:\_\_\_\_\_\_\_
   2. Point 2:\_\_\_\_\_\_\_
   3. Point 3:\_\_\_\_\_\_\_
   4. Point 4:\_\_\_\_\_\_\_
   5. Vertex:\_\_\_\_\_\_\_
8. We will now have the calculator create the function.
   1. On your calculator, push STAT, then EDIT…
   2. In the first column (L1) input all the ***x-values***, and in the second column (L2) input all the ***y-values*** of the points.
   3. Click STAT, then the right arrow (🡪) to the CALC menu, then scroll down to QUADREG.
   4. Write down the values your calculator gives you, **to the nearest thousandth** if necessary.
      1. a:\_\_\_\_\_\_\_\_\_\_
      2. b:\_\_\_\_\_\_\_\_\_\_
      3. c:\_\_\_\_\_\_\_\_\_\_
9. Inputting your values into general form,  , your function will be:
   1. 
   2. Change your general form into standard form,  by completing the square. Show your work using any digital format. Your standard form now is 
   3. State the vertex, domain, range, direction of opening, and axis of symmetry from the function above.
10. Write a couple of sentences explaining any differences from the vertex you stated in part 9, and the vertex in part 15.
11. Using the equation from Part 11, determine the functions *x* and *y* intercepts, if the picture was extended such that it intercepts both axes. Solve this part by **graphing**.
    1. *x*-intercept\_\_\_\_\_\_\_\_
    2. *y*-intercept\_\_\_\_\_\_\_\_
12. Using the equation from Part 14, determine the functions *x* and *y* intercepts, if the picture was extended such that it intercepts both axes. Solve this part by **the quadratic formula**.
    1. *x*-intercept\_\_\_\_\_\_\_\_
    2. *y*-intercept\_\_\_\_\_\_\_\_

