Fathom Instructions
Baby Boom Quadratic Activity

Background Information

A graph of the human population rarely approximates the shape of a parabola with any accuracy. However, underlying conditions occasionally lead to population trends that closely follow a parabolic shape over specific time periods. The Baby Boom occurred right after World War II. Canadian soldiers returning in great numbers after the war started having children within a few years after returning to Canada, which resulted in a huge increase in the number of births. The number of births increased for several years and then began to decline. In this activity, you will determine if a parabola can be a useful model for the number of births per year for this post-war Baby Boom period.

Fathom Analysis

Note: These instructions were written for Fathom 2. If you are using Fathom 1, some instructions may be slightly different.

Retrieving, copying, and pasting the data

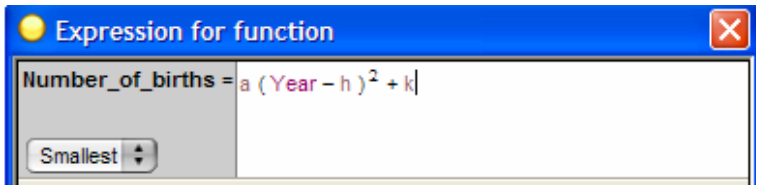
1) On the **E-STAT Output specification** page, under **Screen output – table:**, select **Plain text: Table, time as rows**.
2) Click on the **Retrieve now** button.
3) Highlight only the data, but not the attribute names, legend at the top of the page, or the source line at the bottom of the page.
4) Right-click and select **Copy**.
5) Switch to **Fathom**. If Fathom isn't already running, you will need to launch it.
6) Create a new collection by dragging and dropping the **Collection** icon onto the workspace.
7) Double-click on the pre-assigned collection name to rename it **Baby Boom**.
8) Right-click on the collection and select **Paste Cases**.
9) Double-click on the collection to inspect it.
10) Double-click on the pre-assigned attribute names to rename them **Year** and **Number_of_births**.
11) Save your Fathom collection as **Baby Boom**.

Graphing and modelling the data

1) Create a new graph by dragging and dropping the **Graph** icon onto the workspace.
2) Create a scatter plot of the number of births per year by dragging and dropping the attribute **Year** on the **x-axis** and the attribute **Number_of_births** on the **y-axis**.
3) Create three new sliders by dragging and dropping the **Slider** icon onto the workspace three times.
4) Rename **V1** as **a, V2** as **h**, and **V3** as **k** by double-clicking on the pre-assigned slider names.
5) Right-click on the graph and select **Plot Function**. A pop-up window 'Expression for function' will appear.
6) Enter the quadratic relation in vertex form as follows:
   - Type **a**
   - Click on the **X button *(multiplication sign)***

- Click on the **() button**
- Type **Year**
- Click on the **– button** ***(subtraction sign)***
- Type **h**
- Click to the **right of the brackets**
- Click on the **^ button**
- Type **2**
- Type the **right arrow key**
- Click on the **+ button** ***(addition sign)***
- Type **k**
- Click on the **OK button**

Your screen should look like this:



Note: Your function will not yet appear on your graph.

******* Go to your worksheet and answer questions #1 to 11. *******

7) Using your knowledge of the vertex form of a quadratic equation and the meaning of the parameters **a**, **h** and **k**, change the sliders to values that best approximate the Baby Boom data.
Note: You can change the upper and lower bounds of the slider by double-clicking on the values and then editing **Upper**_ and **Lower**_ in the pop-up table. You can also manually drag the values on the slider by placing your mouse over the values until a **sideways hand** appears. Drag this hand in order to alter the range of values.

******* Go to your worksheet and answer questions #12 to 18. In question #18, you will need to paste your graph. To do this, click on the graph, then go to the Edit menu, and select Copy As Picture. When you are in the worksheet document, right-click and paste your graph. *******