A 5-ounce tray of Red Vines licorice contains about 18 pieces of licorice packaged in a rectangular tray. When unfolded, the tray measures 6 inches by 9 inches.

1. Cut this paper along the solid line to make a 6 inch by 9 inch rectangle. Fold the paper along the dashed lines to create a “tray.”

2. Measure the height, width and length of the tray with a ruler and record your results in the table below. Calculate the volume of your tray. (Remember, Volume = Height x Width x Length)

|  |  |  |  |
| --- | --- | --- | --- |
| **Height** | **Width** | **Length** | **Volume** |
| 0.5 inches |  | 9 inches |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

3. Pick another value for the Height. You may wish to refold the paper. Determine the corresponding Width, Length, and Volume of the tray. Repeat a total of five times and complete the table above with your results.

4. Use STAT EDIT to enter the Heights into L1 in your calculator. Enter the Volumes into L2. Set an appropriate WINDOW on your calculator to see all of the data points. Draw a sketch of your scatter on the back of this paper.

5. Let the Height of the tray be X. Write an expression for the Width and the Volume of the tray in terms of X.

Height = X Width = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Length = 9

Volume = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Enter your Volume Equation into the Y= on your calculator. Look at the graph and draw the function on the back of this paper. It should go through all the points. If it does not, you need to check your equation.

7. What is the practical domain for your equation. Explain your answer.

8. What is the maximum Volume of a Red Vine tray? What are the dimensions (Height, Width and Length) to achieve that Volume.