

## How to use Calculator to help you find Standard Deviation of a Frequency Distribution

### (Section 2.4 – Practice with Example 4 from Lecture Notes)

- You are given a Frequency Distribution chart ( x and f )

Now in the calculator...

**STAT – ENTER** (to select 1:Edit)

In **L<sub>1</sub>** (List 1), enter the Data list “x”. (Type a data value, then ENTER, the next data value, then ENTER...)

**2<sup>nd</sup> – QUIT** (This gets you back to the ‘Main’ screen)

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**STAT – ENTER** (to select 1:Edit)

⇒ (Right arrow over to the next free column – should be List 2) , then **↑** (to be on top of the list)

**2<sup>ND</sup> – 1** (This types in **L<sub>1</sub>** for where your data is listed) then **MINUS (-)** YOUR mean value, then **ENTER**

(This will auto fill the **L<sub>2</sub>** with your Deviations)

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⇒ (Right arrow over to the next column) , then **↑** (to be on top of the list)

**2<sup>ND</sup> – 2** (This types in **L<sub>2</sub>** for where your newest data is listed) --  **$x^2$**  -- **ENTER**

(This will auto fill the **L<sub>3</sub>** with your Squares of Deviations)

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⇒ (Right arrow over to the next column) , then **↑** (to be on top of the list)

In **L<sub>4</sub>** (List 4), enter the Data list “frequency”. (Type a data value, then ENTER, the next data value, ENTER...)

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⇒ (Right arrow over to the next column) , then **↑** (to be on top of the list)

**2<sup>ND</sup> – 3** (This types in **L<sub>5</sub>** for where your squared deviation data is listed) -- **times – 2<sup>ND</sup> – 4** (This types in **L<sub>4</sub>** for where your frequency data is listed) -- **ENTER**

(This will auto fill the **L<sub>5</sub>** with your Squares of Deviations times frequency)

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**2<sup>nd</sup> – QUIT** (This gets you back to the ‘Main’ screen)

**STAT -- ⇒** (To get to CALC) – **1** (To select 1:1-VarStats)

**2<sup>ND</sup> – 5** (This types in **L<sub>5</sub>** for where your last bit of data is listed)

Then hit **ENTER** or scroll down to blink on Calculate then hit **ENTER** (This step depends on your calculator type)

Look for  $\Sigma x^2$  (This value will be your Sum of Squares times frequency)

Divide by your **n** equals your Population Variance (Divide by **n-1** to find Sample Variance)

Taking the square root of your result for Population Variance will equal your Population/Sample Standard Deviation

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Formula for the Frequency Distributions:

$$\text{Variance} = \sigma^2 = \frac{\sum(x-\mu)^2 f}{n}$$

$$\text{Standard Deviation} = \sigma = \sqrt{\frac{\sum(x-\mu)^2 f}{n}}$$