Finding the Standard Deviation from a Frequency Table

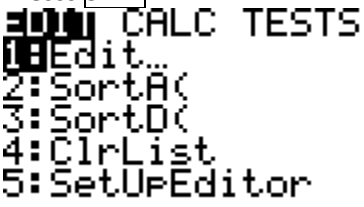
Example:

The given frequency distribution describes the speeds of drivers ticketed in a 30 mi/h speed zone. Find the standard deviation of sample data summarized in a frequency distribution table by using the formula below, where x represents the class midpoint and f represents the class frequency.

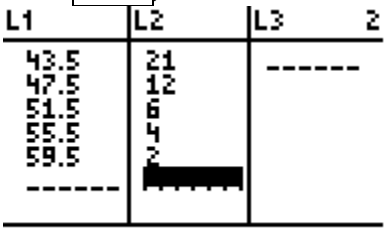
$$s = \sqrt{\frac{n[\sum(f \cdot x^2)] - [\sum(f \cdot x)]^2}{n(n-1)}}$$ standard deviation for frequency distribution

Speed	42 – 45	46 – 49	50 – 53	54 – 57	58 – 61
Frequency	21	12	6	4	2

Presss STAT

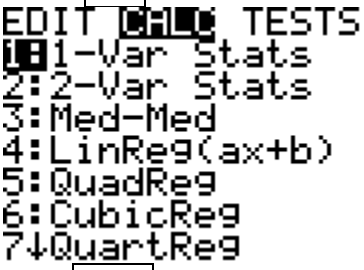


Press ENTER, and enter the **class midpoints into L1** and the **frequencies into L2**



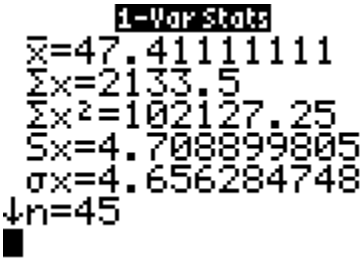
Press 2ND and MODE (Quit)

Presss STAT then arrow over to CALC



Press ENTER, and enter List: L1 and FreqList: L2 (see below)

Arrow down to Calculate and hit ENTER



The sample standard deviation to the nearest tenth $s \approx 4.7$