Precalc14.3

Find measures of variability: interquartile range, mean deviation, standard deviation
Organize and compare data using boxplots
Find the standard deviation from a frequency table

variability

Quiz 14.3 Wed.

outlier

deviation from the mean

mean deviation

variance

standard deviation

Standard Deviation	If a set of data has n values, given by X_i such that $1 \leq i \leq n$, with arithmetic mean $\overline{X}$, the standard deviation σ can be found as follows. $$\sigma = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(X_i - \overline{X})^2}$$

σ is the lowercase Greek letter sigma.

mean(square*freq)

Standard Deviation of the Data in a Frequency Distribution

If $X_1, X_2, \ldots, X_k$ are the class marks in a frequency distribution with k classes, and $f_1, f_2, \ldots, f_k$ are the corresponding frequencies, then the standard deviation σ of the data in the frequency distribution is found as follows.

$$\sqrt{\frac{\sum_{i=1}^{k}(X_i - \bar{X})^2 \cdot f_i}{\sum_{i=1}^{k} f_i}}$$

The standard deviation of a frequency distribution is an approximate number.

variance $V = 64$

standard deviation $\sigma = 8$

17.

Class Limits	Frequency
1–5	2
5–9	8
9–13	15
13–17	6
17–21	38
21–25	31
25–29	13
29–33	7

- Find mean $\bar{x} = 19.3$
- Find variance $v = 42.0$
- Find standard deviation $\sigma \approx 6.48$

$\frac{2320}{120}$ $\frac{5042.668}{120}$

Find the arithmetic mean and the standard deviation of the frequency distribution at the right.

Class Limits	Frequency
0–10,000	15
10,000–20,000	30
20,000–30,000	50
30,000–40,000	60
40,000–50,000	30
50,000–60,000	15

~~10-20e~~

7,19 + ??