I. Three Measures of Variation (*a.k.a.*, dispersion):

variation refers to the characteristic of being dispersed, widespread, spread out or having significant variability...

1. Range (p.102): denoted by the symbol, r

If the data is ordered (ascending or descending)...

then, $r = |x_n - x_1|$ *i.e.*, $x_{max} - x_{min}$

2. Variance (pp.103-107):

denoted by the symbol $\mathbf{s^2}$ for sample data, and by $\boldsymbol{\sigma^2}$ (sigma squared) for population data...

$$\sigma^2 = \Sigma(x_i - \mu)^2 \div n$$

average of the deviations from the mean squared

$$s^2 = \Sigma(x_i - \bar{x})^2 \div (n-1)$$

3. Standard Deviation (pp.104-107):

denoted by the symbol **s** for sample data, and by $\boldsymbol{\sigma}$ (sigma) for population data...

I.3. Standard Deviation (*continued*):

where $\sqrt{\sigma^2} = \sigma$ AND $\sqrt{\mathbf{s}^2} = \mathbf{s}$

i.e., $\sqrt{\text{variance}}$

II. Examples (pp.113-114): #6,16ab

III. Coefficient of Variation (p.109):

CV = standard deviation ÷ arithmetic mean

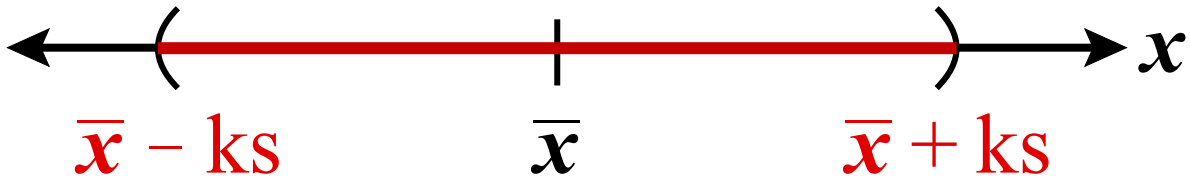
IV. Chebyshev's Theorem (p.110):

for any distribution at least $(1 - 1/k^2) \times 100\%$ of the data lies within $k \times \sigma$ (*or* s) units of the mean...

i.e., n% of all the data is found in the interval

$$\bar{x} - ks < x < \bar{x} + ks$$

IV. continued



where $k = \sqrt{\frac{1}{1 - n/100}}$

V. Example (p.116): #20

VI. Group Data Statistics (p.117):

1. Use midpoint values for all x_i data in each group, class, or interval...
2. Examples (pp.117-118): #22,24

HW: pp.113-118 / Exercises #1,3,5,7,11,13,15,19, 23,25

Read pp.121-125 (section 3.3 / "Quartiles" *only*)