

Name: _____

FORMULAS:

- The sample variance

$$s^2 = \frac{(\sum_{i=1}^n x_i^2) - n(\bar{x})^2}{n-1}$$

- $Cov(X, Y) = E(XY) - \mu_X \mu_Y$.
- Prediction interval (with prediction level $100(1 - \alpha)\%$) for a single sample of size n from a normally distributed population:

$$\bar{x} \pm t_{\frac{\alpha}{2}, n-1} \cdot s \sqrt{1 + \frac{1}{n}}$$

- A $100(1 - \alpha)\%$ confidence interval for the variance of a normally distributed population:

$$\left(\frac{(n-1)s^2}{\chi_{\frac{\alpha}{2}, n-1}^2}, \frac{(n-1)s^2}{\chi_{1-\frac{\alpha}{2}, n-1}^2} \right)$$