

## Midterm Formula Sheet

### Measures of Central Tendency

$$\bar{x} = \frac{\sum X_i}{n} \quad (1)$$

$$\mu = \frac{\sum X_i}{N} \quad (2)$$

### Measures of Variability

$$r = h - l \quad (3)$$

$$SS = \sum (X_i - \bar{x})^2 \quad \text{or} \quad SS = \sum (X_i - \mu)^2 \quad (4)$$

$$s = \sqrt{\frac{\sum (X_i - \bar{x})^2}{n - 1}} \quad (5)$$

$$s^2 = \frac{\sum (X_i - \bar{x})^2}{n - 1} \quad (6)$$

$$\sigma = \sqrt{\frac{\sum (X_i - \mu)^2}{N}} \quad (7)$$

$$\sigma^2 = \frac{\sum (X_i - \mu)^2}{N} \quad (8)$$

$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} \quad (9)$$

### Relationships in the World

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \quad (10)$$

### Reliability

$$\alpha = \left( \frac{k}{k - 1} \right) \left( \frac{s_y^2 - \sum s_i^2}{s_y^2} \right) \quad (11)$$

**z**

$$z_{\bar{x}} = \frac{\bar{x} - \mu_{\bar{x}}}{\sigma_{\bar{x}}} \quad (12)$$

$$z_i = \frac{X_i - \mu}{\sigma} \quad (13)$$

$$X_i = \mu + z_i\sigma \quad (14)$$