Ch-5

Expected Value of a Discrete Random Variable $E(x) = \mu = \sum\left[x \cdot f(x)\right]$	**Variance of a Discrete Random Variable** $Var(x) = \sigma^2 = \sum\left[(x-\mu)^2 \cdot f(x)\right]$
Standard Deviation of Discrete Random Variable $SD(x) = \sigma = \sqrt{Var(x)}$	

Expected Value for the Binomial Distribution $E(x) = \mu = np$	**Variance for the Binomial Distribution** $Var(x) = \sigma^2 = np(1-p)$
Standard Deviation for the Binomial Distribution $SD(x) = \sigma = \sqrt{Var(x)}$	

Ch-6

Converting to the Standard Normal Distribution $z = \frac{x-\mu}{\sigma}$	

Ch-7

Expected value of $\bar{x}$ $E(\bar{x}) = \mu$	**Expected value of $\bar{p}$** $E(\bar{p}) = p$
Standard Error of $\bar{x}$ Finite population: $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}\sqrt{\frac{N-n}{N-1}}$ Infinite population: $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$ Test to use short formula $n/N \leq 0.05$ → true use short	**Standard Error of $\bar{p}$** Finite population: $\sigma_{\bar{p}} = \sqrt{\frac{p(1-p)}{n}}\sqrt{\frac{N-n}{N-1}}$ Infinite population: $\sigma_{\bar{p}} = \sqrt{\frac{p(1-p)}{n}}$
Standardize for sampling distribution for the $\bar{x}$ $z = \frac{\bar{x}-\mu}{\sigma_{\bar{x}}}$	**Standardize for sampling distribution for the $\bar{p}$** $z = \frac{\bar{p}-p}{\sigma_{\bar{p}}}$

Ch-8

Interval Estimate of a Population Mean $\bar{x} \pm z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$	**Margin of error** $E = z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$
Sample size $n = \frac{(z_{\alpha/2})^2 \sigma^2}{E^2}$ or $n = \left(\frac{(z_{\alpha/2})\sigma}{E}\right)^2$	**Interval Estimate for small sample size** $\bar{x} \pm t_{\alpha/2} \frac{s}{\sqrt{n}}$

Ch-9

Calculate z to find the p-value $z = \frac{\bar{x} - \mu_0}{\frac{\sigma}{\sqrt{n}}}$	**Rejection rule for the p-value** Reject H_o if p-value $\leq \alpha$
Test statistic z $z = \frac{\bar{x} - \mu_0}{\frac{\sigma}{\sqrt{n}}}$	**Rejection rule for the test statistic z – two-tail** Reject H_o if $\lvert z \rvert \geq z_{\alpha/2}$ **Rejection rule for the test statistic z – one-tail** Reject H_o if $\lvert z \rvert \geq z_{\alpha}$
Confidence interval test formula $\bar{x} \pm z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$	**Reject Rule for the confidence internal method** Reject H_o if the hypothesized mean falls out side of the confidence interval

Ch-12

Regression Model $\hat{y} = b_o + b_1 x$	**Sum of Squares Total (SST)** $SST = \sum (y_i - \bar{y})^2$
Regression slope b_1 $b_1 = \frac{\Sigma(x_i - \bar{x})(y_i - \bar{y})}{\Sigma(x_i - \bar{x})^2}$	**Sum of Squares Regression (SSR)** $SSR = \sum (\hat{y}_i - \bar{y})^2$ **Coefficient of Determination** $r^2 = \frac{SSR}{SST}$
Regression y-intercept b_o $b_o = \bar{y} - b_1 \bar{x}$	**Correlation Coefficient** $r = \sqrt{r^2}$