Math 1530 Final Exam Name _____

December 6, 2003 Student ID _____

Instructor _____

There are five possible responses to each of the following multiple choice questions. There is only one "BEST" answer. Be sure to read all possible choices before selecting your answer. You may mark on this examination. You should use a calculator, but it is not required. However, a calculator manual cannot be used. For certain questions, formulas and tables are provided.

$$\bar{y} = \frac{\sum y}{n} \qquad s = \sqrt{\frac{\sum (y - \bar{y})^2}{n-1}}$$

$$z = \frac{y - \mu}{\sigma} \text{ (model based)} \qquad z = \frac{y - \bar{y}}{s} \text{ (data based)}$$

$$r = \frac{\sum z_x z_y}{n-1} \qquad b_1 = r\frac{s_y}{s_x} \qquad b_0 = \bar{y} - b_1\bar{x}$$

$$\hat{y} = b_0 + b_1 x \qquad \text{residual} = y - \hat{y}$$

$$P(A) = 1 - P(A^C) \qquad P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A) \times P(B|A) \qquad \text{If A and B are independent, } P(B|A) = P(B)$$

$$E(X) = \mu = \sum xP(x) \qquad Var(X) = \sigma^2 = \sum (x-\mu)^2 P(x)$$

$$P(X = x) = \frac{n!}{x!(n-x)!} p^x q^{n-x} \qquad \mu = np \qquad \sigma = \sqrt{npq}$$

$$\hat{p} = \frac{x}{n} \qquad \mu(\hat{p}) = p \qquad SD(\hat{p}) = \sqrt{\frac{pq}{n}}$$

$$\mu(\bar{y}) = \mu_y \qquad SD(\bar{y}) = \frac{\sigma}{\sqrt{n}} \qquad n = \frac{z^{*^2}\hat{p}\hat{q}}{ME^2}$$

$$\text{Confidence interval for parameter} = \text{statistic} \pm \text{critical value} \times SE(\text{statistic})$$

$$\text{Test Statistic} = \frac{\text{statistic} - \text{parameter}}{SE(\text{statistic})}$$

Parameter	Statistic	SE(statistic)
p	$\hat{p}$	$\sqrt{\frac{\hat{p}\hat{q}}{n}}$
μ	$\bar{y}$	$\frac{s}{\sqrt{n}}$
μ_d	$\bar{d}$	$\frac{s_d}{\sqrt{n}}$

For testing hypotheses about proportions use $SD(\hat{p})$ instead of $SE(\hat{p})$

$$\text{Chi} - \text{square} : \chi^2 = \sum \frac{(\text{obs} - \text{exp})^2}{\text{exp}}, \text{ where exp} = \frac{\text{row total} \times \text{column total}}{\text{table total}}$$