Name _____ Score _____ Teacher _____ Date _____

Large-Sample Confidence Intervals

State independence and large-sample conditions. Label conservative and rule-of-thumb intervals as approximations.

1. **A random independent sample of n=64 observations from a skewed population has x-bar=20 and s=4. Assuming finite variance and that n is large enough for the CLT approximation, construct a 90% mean interval.**

Reference: Approximate large-sample interval: x-bar +/- z_(1-alpha/2)s/sqrt(n), with z_(1-alpha/2)=1.6448536. Independence, finite variance, and adequate CLT accuracy are assumptions.

2. **31 successes occur in n=68 independent Bernoulli trials. Construct the conservative 95% normal interval using p(1-p)<=1/4.**

Reference: Use p-hat +/- z_(1-alpha/2)/(2sqrt(n)), with z_(1-alpha/2)=1.9599639; clip endpoints to [0,1]. This bound is conservative for the normal-approximation standard error.

State assumptions and the quantile convention; round only final endpoints.

Name _____ Score _____ Teacher _____ Date _____

Large-Sample Confidence Intervals

State independence and large-sample conditions. Label conservative and rule-of-thumb intervals as approximations.

3. **Two comparable independent proportion studies use n=72 and n=288. Under the same conservative 95% approximation, compare margin widths and state when nominal coverage may be unreliable.**

Reference: Conservative margin is about 1/sqrt(n), so multiplying sample size by 4 halves the margin. Normal coverage can be poor with dependence or inadequate success/failure counts.

4. **36 of n=76 independent trials succeed. Use the approximate 95% rule p-hat +/- 1/sqrt(n), and label the result as a rule of thumb.**

Reference: The 1/sqrt(n) margin approximates the conservative 95% normal margin because 1.96/2 is about 1. It is not exact.

Name _____ Score _____ Teacher _____ Date _____

Large-Sample Confidence Intervals

State independence and large-sample conditions. Label conservative and rule-of-thumb intervals as approximations.

5. **39 successes occur in n=80 independent Bernoulli trials. Construct the conservative 95% normal interval using p(1-p)<=1/4.**

Reference: Use p-hat +/- z_(1-alpha/2)/(2sqrt(n)), with z_(1-alpha/2)=1.9599639; clip endpoints to [0,1]. This bound is conservative for the normal-approximation standard error.

6. **42 of n=84 independent trials succeed. Use the approximate 95% rule p-hat +/- 1/sqrt(n), and label the result as a rule of thumb.**

Reference: The 1/sqrt(n) margin approximates the conservative 95% normal margin because 1.96/2 is about 1. It is not exact.

State assumptions and the quantile convention; round only final endpoints.

Name _____ Score _____ Teacher _____ Date _____

Large-Sample Confidence Intervals

State independence and large-sample conditions. Label conservative and rule-of-thumb intervals as approximations.

7. **A random independent sample of n=88 observations from a skewed population has x-bar=26 and s=10. Assuming finite variance and that n is large enough for the CLT approximation, construct a 90% mean interval.**

Reference: Approximate large-sample interval: x-bar +/- z_(1-alpha/2)s/sqrt(n), with z_(1-alpha/2)=1.6448536. Independence, finite variance, and adequate CLT accuracy are assumptions.

8. **Two comparable independent proportion studies use n=92 and n=368. Under the same conservative 95% approximation, compare margin widths and state when nominal coverage may be unreliable.**

Reference: Conservative margin is about 1/sqrt(n), so multiplying sample size by 4 halves the margin. Normal coverage can be poor with dependence or inadequate success/failure counts.

State assumptions and the quantile convention; round only final endpoints.