Name _____ Score _____ Teacher _____ Date _____

Bootstrap Confidence Intervals

Use the supplied resample indices exactly. Classroom replicate counts illustrate mechanics and do not reliably estimate 95% coverage.

1. **A sample statistic is 11.857. Its 8 supplied bootstrap replicates are 11.429, 12.714, 14, 10.143, 12.286, 9.714, 11.714, 11.571. Find the 80% percentile interval using linear interpolation h=(B-1)p between ordered values.**

Reference: For confidence 1-alpha, take interpolated bootstrap quantiles at alpha/2 and 1-alpha/2. The short list is educational and not a reliable empirical 95% approximation.

2. **Data positions 1-5 contain [16, 9, 15, 12, 11]. The 11 bootstrap index rows are 32344; 21435; 22314; 54251; 32141; 52415; 31243; 33425; 42434; 24453; 41242. Use each row to form a resample and calculate its mean.**

Reference: Indices are one-based and sampling is with replacement. Repeated indices repeat observations. These few classroom replicates illustrate mechanics, not reliable 95% accuracy.

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

Name _____ Score _____ Teacher _____ Date _____

Bootstrap Confidence Intervals

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3. **Data positions 1-6 contain [17, 10, 16, 13, 12, 13]. The 14 bootstrap index rows are 623551; 215543; 561636; 125132; 131313; 152224; 212121; 161136; 231241; 546253; 665453; 566563; 163331; 335351. Use each row to form a resample and calculate its median.**

Reference: Indices are one-based and sampling is with replacement. Repeated indices repeat observations. These few classroom replicates illustrate mechanics, not reliable 95% accuracy.

4. **The original estimate is 14 and 17 bootstrap replicates are 17, 17, 14, 14, 14, 17, 17, 14, 13, 17, 14, 14, 17, 14, 17, 14, 17. Find the 80% basic interval using linearly interpolated quantiles h=(B-1)p.**

Reference: If bootstrap quantiles are q_low and q_high, the basic interval is (2 theta-hat-q_high, 2 theta-hat-q_low).

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

Name _____ Score _____ Teacher _____ Date _____

Bootstrap Confidence Intervals

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5. **Observed data are 8, 12, 18, 15, 14. A normal model is fitted with mean 13.4 and SD 6. Identify the parametric bootstrap step represented by synthetic resample 13.4, 19.4, 7.4, 13.4, 19.4, and compute its mean.**

Reference: A parametric bootstrap simulates new samples from the fitted distribution, then recomputes the statistic. It does not resample the observed rows directly.

6. **For data 9, 13, 8, 16, 15, 16, construct the empirical PMF, combining repeated observations.**

Reference: The empirical probability at a distinct value is its sample frequency divided by n.

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

Name _____ Score _____ Teacher _____ Date _____

Bootstrap Confidence Intervals

Use the supplied resample indices exactly. Classroom replicate counts illustrate mechanics and do not reliably estimate 95% coverage.

7. **A simulation of 26 confidence intervals at nominal 95% coverage contains the true parameter 25 times. Find observed coverage and interpret the difference.**

Reference: Observed coverage is covered/total. With only a few dozen repetitions, sampling variation is substantial; it neither proves nor disproves nominal long-run coverage.

8. **For data 11, 15, 10, 18, 17, construct the empirical PMF, combining repeated observations.**

Reference: The empirical probability at a distinct value is its sample frequency divided by n.

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