Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Parameters, Statistics, and Inference

Distinguish population parameters from sample observations and statistics. A statistic may depend only on observed sample values and known constants.

1. **For the sample 9, 12, 15, 18, 8, compute x-bar, the sample variance s^2 using denominator n-1, and sample SD s.**

Reference: Use x-bar=(sum x_i)/n and s^2=sum(x_i-x-bar)^2/(n-1). Round only final nonintegers to three decimals.

2. **A team graphs the sampled reaction times and reports their sample mean. Which stage is this?**

Reference: Collection obtains observations; description summarizes the observed sample; inference uses a sample to learn about a population.

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3. **For study 3 of sampled commute times, a student proposes sum(x_i-mu)^2/n as a statistic, where mu is the unknown population mean. Is it a statistic? Give a valid replacement.**

Reference: A statistic cannot contain an unknown population parameter; it must be computable from observed data and known constants.

4. **A population consists of all seedling heights. A random sample records 12, 15, 18, 8, 11. Identify one observation, the population mean parameter mu, and the sample-mean statistic.**

Reference: A parameter describes the population and is typically unknown. An observation is one recorded value. A statistic is computed only from sample observations and known constants.

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5. **For study 5 of sampled battery lifetimes, a student proposes sum(x_i-mu)^2/n as a statistic, where mu is the unknown population mean. Is it a statistic? Give a valid replacement.**

Reference: A statistic cannot contain an unknown population parameter; it must be computable from observed data and known constants.

6. **A population consists of all weekly sales. A random sample records 14, 17, 20, 10, 13, 16, 19. Identify one observation, the population mean parameter mu, and the sample-mean statistic.**

Reference: A parameter describes the population and is typically unknown. An observation is one recorded value. A statistic is computed only from sample observations and known constants.

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7. **A team randomly selects 40 records and measures reaction times. Which stage is this?**

Reference: Collection obtains observations; description summarizes the observed sample; inference uses a sample to learn about a population.

8. **For the sample 16, 19, 9, 12, 15, 18, compute x-bar, the sample variance s^2 using denominator n-1, and sample SD s.**

Reference: Use x-bar=(sum x_i)/n and s^2=sum(x_i-x-bar)^2/(n-1). Round only final nonintegers to three decimals.