

7. Inference for Quantitative Data: Means

Starter Quiz · 课前小测

AP Statistics

Name: _____ Score: _____

1. Inference about a mean uses the t-distribution (not z) mainly because...

- ☐ the population σ is unknown and estimated by s
- ☐ means are always skewed
- ☐ z is illegal
- ☐ the sample is too big

2. For a one-sample t-interval with $n = 25$, what are the degrees of freedom ($n - 1$)?

3. A 95% interval for a mean is (145.9, 154.1). The claim $\mu = 160$ is...

- ☐ not plausible (outside the interval)
- ☐ plausible (inside)
- ☐ proven true
- ☐ impossible to judge

4. The null hypothesis for a one-mean test has the form...

- ☐ $H_0: \mu = \mu_0$
- ☐ $H_0: \bar{x} = 0$
- ☐ $H_a: \mu \neq \mu_0$
- ☐ $H_0: s = 0$

5. With p-value = 0.032 and $\alpha = 0.05$, the decision is...

- ☐ reject H_0
- ☐ fail to reject H_0
- ☐ accept H_0
- ☐ raise α

6. Measuring the same runners before and after training is which design?

- ☐ paired (matched pairs)
- ☐ two independent samples
- ☐ a one-proportion study
- ☐ a census

7. $s_1=6, n_1=25$ and $s_2=8, n_2=25$. Compute $SE = \sqrt{(36/25 + 64/25)}$.

8. Sampling variability is a mistake in data collection that must be fixed.

- ☐ True ☐ False

9. $s = 10, n = 25$. Compute the standard error of the mean $s/\sqrt{n}$.

10. '95% confidence' means there is a 95% probability that μ is in this particular interval.

- ☐ True ☐ False

AP Statistics

1. **the population σ is unknown and estimated by s**

Estimating σ with s adds uncertainty $\rightarrow$ use t.

2. **24**

$$\text{df} = n - 1 = 25 - 1 = 24.$$

3. **not plausible (outside the interval)**

160 lies outside $\rightarrow$ evidence against it.

4. **H0: $\mu = \mu_0$**

H0 states a specific claimed mean μ_0 .

5. **reject H0**

$$0.032 \leq 0.05 \rightarrow \text{reject H0}.$$

6. **paired (matched pairs)**

Same subjects measured twice $\rightarrow$ paired.

7. **2**

$$\sqrt{(1.44 + 2.56)} = \sqrt{4} = 2.$$

8. **False**

Variability is natural and quantifiable — not a blunder.

9. **2**

$$10/\sqrt{25} = 10/5 = 2.$$

10. **False**

μ is fixed; confidence describes the method over many samples.