

AP Statistics

Name: _____ Score: _____

1. Inference about a mean uses the t-distribution (not z) mainly because...
 - ☐ the sample is too big
 - ☐ z is illegal
 - ☐ means are always skewed
 - ☐ the population σ is unknown and estimated by s
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...
 - ☐ proven true
 - ☐ not plausible (outside the interval)
 - ☐ plausible (inside)
 - ☐ impossible to judge
4. The null hypothesis for a one-mean test has the form...
 - ☐ $H_a: \mu \neq \mu_0$
 - ☐ $H_0: s = 0$
 - ☐ $H_0: \bar{x} = 0$
 - ☐ $H_0: \mu = \mu_0$
5. With $p\text{-value} = 0.032$ and $\alpha = 0.05$, the decision is...
 - ☐ reject H_0
 - ☐ accept H_0
 - ☐ raise α
 - ☐ fail to reject H_0
6. Measuring the same runners before and after training is which design?
 - ☐ two independent samples
 - ☐ a one-proportion study
 - ☐ paired (matched pairs)
 - ☐ a census
7. For a difference-of-means interval, the value representing 'no difference' is 0.
 - ☐ True ☐ False
8. $s_1=6, n_1=25$ and $s_2=8, n_2=25$. Compute $SE = \sqrt{(36/25 + 64/25)}$.

9. The paired t-test statistic is $t = \bar{d} / (s_d / \sqrt{n})$ with $df = n - 1$.
 - ☐ True ☐ False
10. A wrong inference procedure can invalidate a conclusion even when its arithmetic is correct.
 - ☐ 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**

$$df = n - 1 = 25 - 1 = 24.$$

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

160 lies outside $\rightarrow$ evidence against it.

4. **$H_0: \mu = \mu_0$**

H_0 states a specific claimed mean μ_0 .

5. **reject H_0**

$$0.032 \leq 0.05 \rightarrow \text{reject } H_0.$$

6. **paired (matched pairs)**

Same subjects measured twice $\rightarrow$ paired.

7. **True**

$$\mu_1 - \mu_2 = 0 \text{ means equal means.}$$

8. **2**

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

9. **True**

It's a one-sample t -test on the paired differences.

10. **True**

The method must fit the study design and assumptions. Correct arithmetic alone does not establish a valid inference.