Math 10 GW 21 Answers

1. In a study testing the effects of an herbal supplement on blood pressure DATA in men, 11 randomly selected men were given an herbal supplement for 15 weeks. The following measurements are for each subject's diastolic blood pressure taken before and after the 15-week treatment period. At ⍰ = 0.10, can you support the claim that systolic blood pressure was lowered?

(a) (DESIGN) State your Hypothesis

Ha: **herbal supplements reduce mean blood pressure.**

$Ho: \mu_d \geq 0 \quad Ha: \mu_d < 0$

(b) (DESIGN) What Model and Assumptions

Matched pair t-test – dependent sampling. Also assume Differences are approximately Normal

Left tailed test

(c) (DESIGN) Significance Level

$\alpha = .10$**, the maximum probability of making Type I error, which would be incorrectly claiming blood pressure was lowered.**

(d) (DESIGN) Decision Rule (p-value method)

Reject Ho if pvalue < alpha

(e) (DATA) Conduct the test and **circle** your decision

Before	After
123	124
109	97
112	113
102	105
98	95
114	119
119	114
112	114
110	121
117	118
130	133

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Paired T for After - Before

              N    Mean  StDev
Mean
After        11  113.91  11.33
Before       11  113.27   9.02
Difference   11    0.64   5.87

T-Value = 0.36


Right-tailed test P-Value = 0.363
Left-tailed test P-Value =  0.637
Two-tailed test P-Value =   0.727
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p-value = .6367 so

Fail to Reject Ho

(f) (CONCLUSION) State your overall conclusion in language that is clear, relates to the original problem and is consistent with your decision.

Insufficient evidence to conclude that herbal supplements reduce mean blood pressure.

2. **Many answers possible.**
   Independent sampling might mean comparing receipts of 20 shoppers from each store.
   Dependent sampling – sample 20 items that are sold at both stores. Look at the difference in prices.

   Dependent sampling should be better here. You can literally compare apples to apples.