Chapter 7 Pre-Test

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Points Awarded	**10**
Points Missed	**0**
Percentage	**100%**

1. Do students tend to improve their GMAT scores the second time they take the test? A random sample of four students who took the test twice received the following scores:

Student	1	2	3	4
First score	450	520	720	600
Second score	440	600	720	630

Assume that the changes in GMAT scores (second score – first score) have an approximately Normal distribution. A 90% confidence interval for the mean change in score is:

A. 25 ± 64.3.
B. 25 ± 47.5.
C. 25 ± 43.1.
D. 25 ± 33.2.

Correct

Points Earned: 1/1

Your Response: B

2. Which of the following is correct?

A. Matched pairs designs are preferred because they require fewer subjects.
B. The matched pairs *t* test is robust against non-Normality as long as the standard deviation of the differences is large.
C. Matched pairs designs can be used for any data as long as the two sample sizes are equal.
D. The matched pairs *t* test is the same as the one-sample *t*-test but done on the differences.

Correct

Points Earned: 1/1

Your Response: D

3. A shipment of 10,000 cartons of fruit arrives at a distribution center with a nominal weight of 10 lbs per carton. A sample of 10 cartons is selected and weighed. The auditor wishes to test the hypothesis that the average weight of the cartons matches the nominal value vs. that the cartons are underweight at $n = \left(\frac{z^* \sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. Here is some computer output on the analysis of this data.

Moments		Test Mean=value	
Mean	8.7705423	Hypothesized Value	10
Std Dev	1.9130807	Actual Estimate	8.77054
Std Err Mean	0.6049692	DF	9
Upper 95% Mean	10.139078	Std Dev	1.91308
Lower 95% Mean	7.4020069		t Test
N	10	Test Statistic	-2.0323
		Prob > |t|	0.0727
		Prob > t	0.9637
		Prob < t	0.0363*

Based on the output above, which of the following is correct?

A. Because the 95% confidence interval contains the value 8.77, there is no evidence that the mean weight differs from the nominal weight.

B. The standard error of 0.60 lbs measures the variation in weights of individual cartons.

C. Ninety-five percent of cartons contain between 7.4 and 10.1 lbs of fruit.

D. The margin of error is 1.37 lbs.

Correct

Points Earned: 1/1

Your Response: D

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4. A shipment of 10,000 cartons of fruit arrives at a distribution center with a nominal weight of 10 lbs per carton. A sample of 10 cartons is selected and weighed. The auditor wishes to test the hypothesis that the average weight of the cartons matches the nominal value vs. that the cartons are underweight at $n = \left(\frac{z^*\sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. Here is some computer output on the analysis of this data.

Moments		Test Mean=value	
Mean	8.7705423	Hypothesized Value	10
Std Dev	1.9130807	Actual Estimate	8.77054
Std Err Mean	0.6049692	DF	9
Upper 95% Mean	10.139078	Std Dev	1.91308
Lower 95% Mean	7.4020069		t Test
N	10	Test Statistic	-2.0323
		Prob > |t|	0.0727
		Prob > t	0.9637
		Prob < t	0.0363*

Which are the null and alternative hypotheses?

A. $H: \mu = 10; \quad A: \mu < 10$

B. $H: \mu = 9.8; \quad A: \mu < 9.8$

C. $\alpha = 0.05$

D. $z = \frac{\bar{X} - \mu}{\sigma/\sqrt{n}} = \frac{9.8 - 10}{2/\sqrt{20}}$

Incorrect

Points Earned: 1/1

Your Response: A

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5. A shipment of 10,000 cartons of fruit arrives at a distribution center with a nominal weight of 10 lbs per carton. A sample of 10 cartons is selected and weighed. The auditor wishes to test the hypothesis that the average weight of the cartons matches the nominal value vs. that the cartons are underweight at $n = \left(\frac{z^* \sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. Here is some computer output on the analysis of this data.

Moments	
Mean	8.7705423
Std Dev	1.9130807
Std Err Mean	0.6049692
Upper 95% Mean	10.139078
Lower 95% Mean	7.4020069
N	10

Test Mean=value	
Hypothesized Value	10
Actual Estimate	8.77054
DF	9
Std Dev	1.91308
t Test	
Test Statistic	-2.0323
Prob > |t|	0.0727
Prob > t	0.9637
Prob < t	0.0363*

Which of the following is correct?

A. The *p*-value is 0.07 and there is no evidence at $n = \left(\frac{z^* \sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. that the mean weight is less than the nominal weight.

B. The *p*-value is 0.04 and there is evidence at $n = \left(\frac{z^* \sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. that the mean weight is less than the nominal weight.

C. The *p*-value is 0.96 and there is no evidence at $n = \left(\frac{z^* \sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. that the mean weight is less than the nominal weight.

D. The *p*-value is 0.05 and there is no evidence at $n = \left(\frac{z^* \sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. that the mean weight is less than the nominal weight.

Correct

Points Earned: 1/1

Your Response: B

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6. A shipment of 10,000 cartons of fruit arrives at a distribution center with a nominal weight of 10 lbs per carton. A sample of 5 cartons is selected and weighed. The average weight of the sample is 10.2 lbs, and the standard deviation of weight among cartons is 2 lbs. Find a 95% confidence interval for the mean weight of all the cartons of fruit in the shipment.

A. 10 ± 2.48

B. 10.2 ± 2.48

C. 10 ± 2.30

D. 10.2 ±2.30

Correct

Points Earned: 1/1

Your Response: B

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7. Do students tend to improve their GMAT scores the second time they take the test? A random sample of 10 students who took the test twice was selected and the following output summarizes the results of an analysis of the differences (second score – first score):

Moments	
Mean	37
Std Dev	28.303906
Std Err Mean	8.9504811
Upper 95% Mean	57.247395
Lower 95% Mean	16.752605
N	10

Test Mean=value	
Hypothesized Value	0
Actual Estimate	37
DF	9
Std Dev	28.3039
t Test	
Test Statistic	4.1339
Prob > |t|	0.0025*
Prob > t	0.0013*
Prob < t	0.9987

Assume that the changes in GMAT scores (second score – first score) have an approximately Normal distribution. Which of the following is correct?

A. Because the 95% confidence interval for the mean difference includes the value 37, there is no evidence of a difference in mean score between the two tests.

B. Because the *p*-value is 0.0013, there is less than a 1% chance that the test scores remained the same.

C. About 95% of students would see an increase in their score by an average of 37 points.

D. We have strong evidence at $n = \left(\frac{z^* \sigma}{ME}\right)^2 = \left(\frac{1.96(2)}{.5}\right)^2$. that the mean score the second time around is greater than the mean score on the first test.

Correct

Points Earned: 1/1

Your Response: D

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8. Is the average rent for a two-bedroom apartment more than the average rent for a one-bedroom apartment? A sample of 10 advertisements of each type were collected, the rent (in dollars) for each suite was found, and the following is computer output of the analysis:

Means and Std Deviations

Level	Number	Mean	Std Dev
1	10	531.500	83.3350
2	10	611.500	88.2563

t Test

2-1
Assuming unequal variances

Difference	80.00	t Ratio	2.084161
Std Err Dif	38.38	DF	17.94107
Upper CL Dif	160.66	Prob > |t|	0.0517
Lower CL Dif	-0.66	Prob > t	0.0259*
Confidence	0.95	Prob < t	0.9741

Which of the following is correct?

A. $H : \bar{X}_1 = \bar{X}_2; \quad \bar{X}_1 < \bar{X}_2$

B. $H : \bar{X}_1 < \bar{X}_2; \quad \bar{X}_1 = \bar{X}_2$

C. $H : \mu_1 = \mu_2; \quad \mu_1 < \mu_2$

D. $H : \mu_1 < \mu_2; \quad \mu_1 = \mu_2$

Correct

Points Earned: 1/1

Your Response: C

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9. Is the average rent for a two-bedroom apartment more than the average rent for a one-bedroom apartment? A sample of 10 advertisements of each type were collected and the rent (in dollars) for each suite was found. Here are some preliminary statistics:

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
1	10	531.500	83.3350	26.353	471.89	591.11
2	10	611.500	88.2563	27.909	548.37	674.63

Which of the following is correct?

A. Because 10 advertisements of each type were found, a matched pairs design could be used.

B. About 95% of one-bedroom apartments have rents between $470 and $590.

C. Because the two standard deviations are about equal, there is no evidence that the average rents are different.

D. The standard errors measure how much the average rent for each class could vary if new samples of size 10 were taken.

Correct

Points Earned: 1/1

Your Response: D

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10. How much, on average, does rent for a two-bedroom apartment differ from rent for a one-bedroom apartment? A sample of 10 advertisements of each type were collected, the rent ($) for each suite was found, and the following is computer output of the analysis:

Means and Std Deviations

Level	Number	Mean	Std Dev
1	10	531.500	83.3350
2	10	611.500	88.2563

t Test

2-1
Assuming unequal variances

Difference	80.00	t Ratio	2.084161
Std Err Dif	38.38	DF	17.94107
Upper CL Dif	160.66	Prob > |t|	0.0517
Lower CL Dif	-0.66	Prob > t	0.0259*
Confidence	0.95	Prob < t	0.9741

Which of the following is correct?

A. About 95% of the time the rent increases by $80.
B. We are 95% confident that the average increase in rent is between about $0 and $160.
C. There is about a 3% chance that the rents are larger for 2 bedroom apartments.
D. The standard deviation of the increase in rent is about $40.

Correct

Points Earned: 1/1

Your Response: B

VIEW STUDY PLAN