1. **(Use Data 1)** Compute the test statistic for testing whether there is a significant difference between the proportion of males and females who enjoy shopping for clothing.

   (a) 53.825 (correct)
   (b) 172.8
   (c) 5.82
   (d) 17.6
   (e) 0.272

2. **(Use Data 1)** Is there evidence of a significant difference between the proportion of males and females who enjoy shopping for clothing at the 0.01 level of significance?

   (a) There is a significant evidence that the proportion of males and females who enjoy shopping for clothing are different (correct)
   (b) There is no enough evidence that the proportion of males and females who enjoy shopping for clothing are different
   (c) There is a significant evidence that the proportion of males who enjoy shopping for clothing are higher than that of the females
   (d) There is a significant evidence that the proportion of males who enjoy shopping for clothing are lower than that of the females
   (e) We fail to reject the hypothesis

3. **(Use Data 2)** What is the $p$-value associated with the test statistic?

   (a) $p_{value} < 0.005$ _____(correct)

   (b) $0.01 < p_{value} < 0.025$

   (c) $0.025 < p_{value} < 0.05$

   (d) $0.995 < p_{value} < 0.9975$

   (e) $0.9975 < p_{value} < 0.999$

4. **(Use Data 2)** Which of the following statements is correct for testing the evidence of a significant difference among the age groups with respect to major grocery shopping day?
   (Use $\alpha = 0.05$)

   (a) We reject $H_0$ and conclude that there is a significant difference in the age groups with respect to major grocery shopping day _____(correct)

   (b) We fail to reject $H_0$ and conclude that there is no significant difference in the age groups with respect to major grocery shopping day

   (c) We reject $H_0$ and conclude that there is no significant difference in the age groups with respect to major grocery shopping day

   (d) A and B are correct

   (e) We fail to reject $H_0$ and conclude that there is a significant difference in the age groups with respect to major grocery shopping day

5. **(Use Data 2)** By using the Marascuilo procedure, determine which age groups are different. Use alpha = 0.05.

   (a) There is a significant difference between the 35-54 and over-54 groups and between the under-35 and over-54 groups _____(correct)

   (b) There is a significant difference only between the 35-54 and over-54 groups

   (c) There is a significant difference between the under-35 and 35-54 groups and between the under-35 and over-54 groups

   (d) There is a significant difference between the under-35 and 35-54 groups and between the 35-54 and over-54 groups

   (e) There is no significant difference among the groups

6. **(Use Data 3)** At the 0.05 level of significance, is there evidence that the proportion of coffee drinkers who prefer Brand A is lower at the beginning of the advertising campaign than at the end of the advertising campaign?

   (a) $H_0$ is rejected, there is evidence that the proportion of coffee drinkers who prefer Brand A is lower at the beginning of the advertising campaign than at the end of the advertising campaign _____(correct)

   (b) $H_0$ is rejected, there is evidence that the proportion of coffee drinkers who prefer Brand A is higher at the beginning of the advertising campaign than at the end of the advertising campaign

   (c) $H_0$ is not rejected, there is evidence that the proportion of coffee drinkers who prefer Brand A is lower at the beginning of the advertising campaign than at the end of the advertising campaign

   (d) $H_0$ is not rejected, there is evidence that the proportion of coffee drinkers who prefer Brand A is higher at the beginning of the advertising campaign that at the end of the advertising campaign

   (e) $H_0$ is not rejected, there is no evidence that the proportion of coffee drinkers who prefer Brand A is lower at the beginning of the advertising campaign than at the end of the advertising campaign

7. **(Use Data 3)** What is the $p$-value associated with the test statistic?

(a) 0.0099 (correct)
(b) 0.9901
(c) 0.0198
(d) 0.0049
(e) 0.05

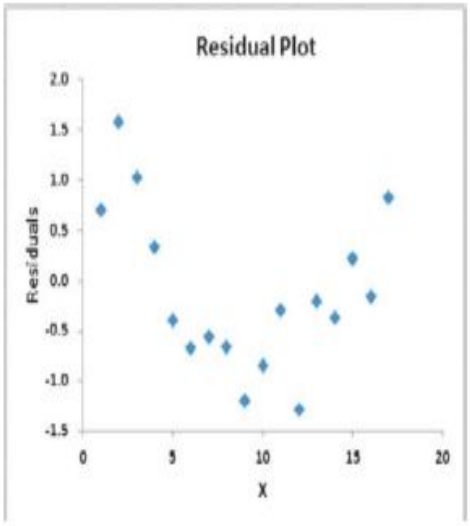
8. The residuals for 15 consecutive time periods are as follows:

| Time Period | Residual | Time Period | Residual |
|---|---|---|---|
| 1 | +4 | 9 | +6 |
| 2 | -6 | 10 | -3 |
| 3 | -1 | 11 | +1 |
| 4 | -5 | 12 | +3 |
| 5 | +2 | 13 | 0 |
| 6 | +5 | 14 | -4 |
| 7 | -2 | 15 | -7 |
| 8 | +7 | | |

Given that $\sum(e_i - e_{i-1})^2 = 465$ and $\sum e_i^2 = 280$
What is the Durbin-Watson statistic?

(a) 1.661 (correct)
(b) 2.891
(c) 1.300
(d) 1.516
(e) 0.892

9. Based on the residual plot below, you will conclude that there might be a violation of which of the following assumptions.




(a) Linearity of the relationship _____ (correct)

(b) Homoscedasticity

(c) Normality of errors

(d) (b) and (c)

(e) (a) and (b)

10. **(Use Data 4)** Predict the weekly sales of pet food for stores with 8 feet of shelf space for pet food

(a) 204.2 _____ (correct)

(b) 145

(c) 7.4

(d) 102.1

(e) 85.8

11. **(Use Data 4)** What is the percentage of the total variation in sales that can be explained by the variation in shelf space where $SSR = 20535$ and $SST = 30025$?

(a) 68.4 (correct)
(b) 31.7
(c) 97.5
(d) 2.5
(e) 46.2

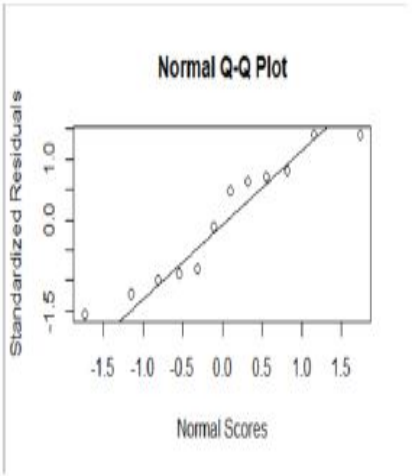
12. **(Use Data 4)** The standard error of the estimate is

(a) 30.81 (correct)
(b) 94.9
(c) 54.79
(d) 45.31
(e) 12.5

13. **(Use Data 4)** To test whether there is evidence of a linear relationship between shelf space and sales, the measured value of the test statistic is

(a) 4.65 (correct)
(b) 2.23
(c) 1.59
(d) 7.4
(e) 0.012

14. What does the plot of residual below suggest?




(a) The data are normally distributed (correct)
(b) The data are not normal
(c) The linearity condition is satisfied
(d) The linearity condition is not satisfied
(e) The equal variation condition is not satisfied

15. Based on a sample of $n = 20$, the least-squares method was used to develop the following prediction line: $\hat{Y}_i = 5 + 3X_i$.
In addition, $S_{YX} = 1.0, \bar{X} = 2$ and $\sum_{i=1}^{n}(X_i - \bar{X})^2 = 20$. Construct a 95% confidence interval estimate of the population mean response for $X = 4$.

(a) [15.95, 18.05] _____(correct)
(b) [15.95, 17.01]
(c) [1.05, 2.101]
(d) [14.65, 19.35]
(e) [23.95, 26.55]

16. Based on a sample of $n = 20$, the least-squares method was used to develop the following prediction line $\hat{Y}_i = 5 + 3X_i$. In addition, $S_{YX} = 1.0$, $\bar{X} = 2$ and $\sum_{i=1}^{n}(X_i - \bar{X})^2 = 20$. Construct a 95% prediction interval estimate of the population mean response for $X = 4$.

(a) [14.65, 19.35] _____(correct)
(b) [14.65, 18.05]
(c) [15.95, 19.35]
(d) [1.05, 2.101]
(e) [23.95, 26.55]

17. The personnel director of a large department store wants to reduce absenteeism among sales associates. She decides to institute an incentive plan that provides financial rewards for sales associates who are absent fewer than five days in a given calender year. A sample of 100 sales associates selected at the end of the second year reveals the following:

| | Year 2 | | |
|---|---|---|---|
| Year 1 | $< 5$ Days Absent | $\geq 5$ Days Absent | Total |
| $< 5$ Days Absent | 32 | 4 | 36 |
| $\geq 5$ Days Absent | 25 | 39 | 64 |
| Total | 57 | 43 | 100 |

At the 0.05 level of significance, is there evidence that the proportion of employees absent fewer than five days was lower in year 1 than in year 2?

(a) There is enough evidence to conclude that the proportion of employees absent less than 5 days was lower in year 1 than in year 2 _____(correct)

(b) There is not enough evidence to conclude that the proportion of employees absent less than 5 days was lower in year 1 than in year 2

(c) There is enough evidence to conclude that the proportion of employees absent greater than 5 days was lower in year 1 than in year 2

(d) There is enough evidence to conclude that the proportion of employees absent greater than 5 days was the same in year 1 and in year 2

(e) No conclusion can be made

18. **(Use Data 5)** How many states were in the sample?

(a) 20 _____(correct)

(b) 19

(c) 18

(d) 1

(e) 21

19. **(Use Data 5)** What is the standard error of the estimate?

(a) 25.88 (correct)
(b) 670
(c) 8.115
(d) 0.000002896
(e) 15.46

20. **(Use Data 5)** What is the coorelation coefficient?

(a) 0.6797 (correct)
(b) 0.462
(c) 0.3203
(d) 0.538
(e) 0.234