

ANOVA Review Questions

The following is a one-way ANOVA.

15	16	18
16	16	19
11	19	16
	20	19
	19	

1. Find the grand mean ($\bar{\bar{x}}$).
a. 16.5 b. 16.7 *c. 17.0 d. 17.3 e. none of the above
2. Find the sum of squares of treatments.
a. 34 *b. 36 c. 38 d. 40 e. none of the above
3. Find the sum of squares of errors.
*a. 34 b. 36 c. 38 d. 40 e. none of the above
4. Find the mean squares of treatment.
a. 17 *b. 18 c. 19 d. 20 e. none of the above
5. Find the mean squares of errors.
*a. 3.778 b. 4 c. 4.222 d. 4.444 e. none of the above
6. Find the statistic.
a. 4.14 b. 4.50 *c. 4.76 d. 5.556 e. none of the above
7. Find the 95% confidence critical value.
a. 3.01 *b. 4.26 c. 5.71 d. 8.02 e. none of the above
8. Are at least two means different from one another with 95% confidence?
*a. Yes b. No c. Inconclusive d. None of the above
9. Find the 99% confidence critical value.
a. 3.01 b. 4.26 c. 5.71 *d. 8.02 e. none of the above
10. Are at least two means different from one another with 99% confidence?
a. Yes *b. No c. Inconclusive d. None of the above

The following table includes data about three experiments. You are requested to perform a *two-way ANOVA* test.

15	27	6
24	24	9
27	15	15

11. Find the grand mean ($\bar{\bar{x}}$).
a. 16 b. 17 *c. 18 d. 19 e. none of the above
12. Find the sum of squares of treatments.
*a. 288 b. 162 c. 156 d. 178 e. none of the above
13. Find the sum of squares of errors.
a. 288 b. 162 *c. 180 d. 178 e. none of the above
14. Find the mean squares of treatment.
a. 27 b. 39 c. 48 *d. 144 e. none of the above
15. Find the mean squares of errors.
a. 27 *b. 45 c. 48 d. 144 e. none of the above
16. Find the statistic.
*a. 3.20 b. 5.14 c. 5.33 d. 6.94 e. none of the above
17. Find the 95% confidence critical value.
a. 3.69 b. 5.14 c. 5.33 *d. 6.94 e. none of the above
18. Are at least two means different from one another with 95% confidence?
a. Yes *b. No c. Inconclusive d. None of the above
19. Find the 99% confidence critical value.
a. 10.92 b. 9.55 c. 13.27 *d. 18.00 e. none of the above
20. Are at least two means different from one another with 99% confidence?
a. Yes *b. No c. Inconclusive d. None of the above

The following table includes data about three products. You are requested to perform a one-way ANOVA test.

12	24	20
20	22	27
16	26	30
		31

21. Find the grand mean ($\bar{\bar{x}}$).
*a. 22.8 b. 21.8 c. 21.5 d. 22.2 e. none of the above
22. Find the sum of squares of treatments.
*a. 213.6 b. 172.5 c. 207.6 d. 171.6 e. none of the above
23. Find the sum of squares of errors.
a. 108 b. 138 c. 126 *d. 114 e. none of the above
24. Find the mean squares of treatments.
a. 85.8 b. 86.25 *c. 106.8 d. 103.8 e. none of the above
25. Find the mean squares of errors.
a. 15.43 *b. 16.29 c. 18.00 d. 19.71 e. none of the above
26. Find the statistic.
a. 4.77 b. 5.59 c. 5.27 *d. 6.56 e. none of the above
27. Find the 95% confidence critical value.
a. 4.26 *b. 4.74 c. 4.82 d. 4.43 e. none of the above
28. Are at least two means different from one another with 95% confidence?
*a. Yes b. No c. Inconclusive d. None of the above