This problem is covering the minimum of what should our students know and practice of "One-Way ANOVA".

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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Greatly undersells | Slightly undersell | Slightly oversells | Greatly oversells | Correctly |
| A | B | C | D | E |
| 15 | 16 | 8 | 5 | 12 |
| 18 | 17 | 7 | 6 | 19 |
| 17 | 21 | 10 | 13 | 18 |
| 19 | 16 | 15 | 11 | 12 |
| 19 | 19 | 14 | 9 | 17 |
| 20 | 17 | 14 | 10 | 14 |
| **Average: 18** | **17.667** | **11.333** | **9.2** | **9.467** |

1. ,  All means are not equal.

F crit. = 2.7587, F stat. = 

F stat. = 12.56 > F crit. = 2.7587. At the 0.05 level of significance we reject  , we conclude that there is evidence of a difference in the mean rating. All means are not equal.

1. Critical range =  =

We compute the absolute mean differences. They are: pairs, .

|  |  |  |
| --- | --- | --- |
| 1 |  |  |
| 2 |  | A is different from C |
| 3 |  | A is different from D |
| 4 |  |  |
| 5 |  | B is different from C |
| 6 |  | B is different from D |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  | D is different from E |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Greatly undersells | Slightly undersell | Slightly oversells | Greatly oversells | Correctly |
| A | B | C | D | E |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Median: 18.5** | **17** | **12** | **9.5** | **15.5** |

,  All variances are not equal.

F crit. = 2.7587, F stat. = 

F stat. = 1.9272 < F crit. = 2.7587. At the 0.05 level of significance we failed to reject  , we conclude that there is no evidence of a difference in the variation in ratings among the five advertisements.

1. We should use the advertisements underselling the pen's characteristics (A and B) because they had the highest mean ratings and avoid the other advertisements because they had the low mean ratings.