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| --- | --- | --- |
| **S. No.** | **Delivery time (in minutes)** | |
| **Local restaurant** | **Branch of standard** |
| 1 | 16.4 | 20.4 |
| 2 | 15.0 | 16.2 |
| 3 | 17.5 | 15.0 |
| 4 | 14.2 | 18.2 |
| 5 | 20.0 | 22.5 |
| 6 | 15.4 | 16.2 |
| 7 | 17.5 | 20.0 |
| 8 | 14.1 | 15.0 |
| 9 | 13.4 | 15.0 |
| 10 | 20.7 | 24.2 |
| 11 | 18.6 | 20.0 |
| 12 | 20.0 | 20.0 |
| 13 | 15.3 | 18.2 |
| 14 | 15.0 | 19.5 |
| 15 | 12.8 | 20.0 |

A local pizza restaurant and a branch of a branded pizza chain are located across the street from a university campus. The local pizza restaurant advertises that it delivers pizzas to the dormitories faster than the branded restaurant. In order to determine whether this advertisement is valid, some students of Statistics decide to order 15 pizzas from the local pizza restaurant and 15 pizzas from the branch of the branded pizza chain, at different times and record the delivery times (in minutes). The data are given in Table 4.

Assuming that the delivery time is normally distributed in both local and branded restaurants, is there evidence that the mean delivery time for the local restaurant is less than the mean delivery time for the branded restaurant at 5% level of significance if:

i) the standard deviations of the delivery time of the local pizza restaurant and the branded restaurant are known to be 2.5 and 3.0, respectively,

ii) the standard deviations of the delivery time of the local pizza restaurant and the branded restaurant are equal and not known, and

iii) the students matched the samples for each of the 15 times that the pizzas were ordered and have one measurement from the local pizza restaurant and one from the of branded restaurant.