**Exercise 8.1B**

The mean weight loss for Diet B and Diet A are 3.71KG and 5.341KG respectively, which means that Diet B produced less weight loss than Diet A.

Both diets seem to be effectiveness for participants as the sample standard deviations are almost equal, i.e., 2.536kg for Diet A, and 2.769kg for Diet B respectively.

Both diets caused participants to lose weight.

**Exercise 8.2B**

IQR for Diet A and Diet B are: 3.285KG and 3.451KG respectively.

We can infer that both diets produced consistent weight loss for the sample groups, when compared to each other, i.e., there is no large variance and outliers do not affect this measurement.

However, the findings for Diet A are relatively right skewed, as its first and third quartiles are higher than Diet B, i.e., 3.748kg and 7.033kg, vs 1.953kg and 5.404kg respectively.

This implies that Diet A produced a higher quality of weight loss than Diet B.

**Exercise 8.3D**

There are more people preferred “Other brands” of breakfast cereal over A or B (Area 1: 60%, Area 2: 45.6%).

Brand A is the least preferred in both the areas, i.e., Area 1: 16%, Area 2: 21%

**Exercise 8.4G**

Sample mean numbers of impurities for filtration Agent 1 and Agent 2 are 8.25 and 8.68 respectively.

It shows that the mean number of impurities was fewer for Agent 1 than Agent2, by 0.43.

We can conclude that Agent 1 is the preferred choice.

**Exercise 8.5**

The obtained related sample t = -3.2639 with 11 degrees of freedom and the associated one-tailed p-value is 0.0037, as a result the observed t is significant at the 1% level.

Therefore, it is evident that the underlying mean number of impurities was fewer for Agent 1, by 0.43 impurities per agent.

Again, the result shows that Agent 1 is the preferred choice.

**Exercise 8.6**

Part 1: F-Test Two-Sample for Variances

|  |  |  |
| --- | --- | --- |
| Sample variance of Male and Female | Male = 233.13 | Female = 190.18 |
| Observed F test statistic | F = 1.226 | df = 59 |
| Two tailed p-value | p = 0.436 |  |
| The observed F ratio is not significant |  |  |
| Conclusion: To proceed to use the equal variances from the t test |  |  |

Part 2: t-Test: Two-Sample Assuming Equal Variances

t = 3.268, df =118

p two tail = 0.0014

observed t is significant at 1% level

Male = 52.913; Female - 44.233

**Conclusion: Male income is more than female**