1.

a)

Sample mean and sample variance of both stores can be calculated as follows:

|  |  |  |
| --- | --- | --- |
|  | Miller's | Albert's |
|  | 119.25 | 111.99 |
|  | 121.32 | 114.88 |
|  | 122.34 | 115.11 |
|  | 120.14 | 117.02 |
|  | 122.19 | 116.89 |
|  | 123.71 | 116.62 |
|  | 121.72 | 115.38 |
|  | 122.42 | 114.4 |
|  | 123.63 | 113.91 |
|  | 122.44 | 111.87 |
| Mean | 121.916 | 114.807 |
| Variance | 1.955004 | 3.386712 |

Let = Mean weekly expense of Miller’s = 121.916 and = Mean weekly expense of Albert’s = 114.807

Two samples are assumed to be independent and have equal variances. So, we can calculate the Pooled estimate of Standard Error:

This is a two-tailed hypothesis testing with the mean different between and = 0

Test statistic can be calculated as:

At 0.05 level of significance with degree of freedom = 18, the cutoff t-statistic = 2.101

Since the Test statistic value exceeds the cutoff t-statistic, we reject the null Hypothesis and conclude that the mean weekly expense between Miller’s and Albert’s supermarket chains are different ANS

b)

A 95% confidence interval band can be calculated as follows:

So, at 95% confidence interval, the mean weekly expense different between Miller’s and Albert’s is between $8.645 and $5.573 ANS

c)

Null Hypothesis:

Alternative Hypothesis:

From a), the Test statistic can be calculated as follows:

This is a one-tailed hypothesis testing. At 0.05 level of significance with degree of freedom = 18, the cutoff t-statistic = 1.734

Since the Test statistic value exceeds the cutoff t-statistic, we reject the null Hypothesis and conclude that the mean weekly expense of Miller’s supermarket chain is more than $5 higher than Albert's.ANS