

Statistics Results for Unit8 Exercises:

Exe 8.1B:

Diet A	n	50
	Mean	5.341
	SD	2.536

Thus, the sample size for Diet A is $n = 50$
The sample mean weight loss for Diet A is $= 5.341$. The average weight loss for those individuals who undertook Diet A is 5.341 kg, so the diet appears to have been effective. The sample standard deviation of the weight loss for Diet A is $s = 2.536$ kg. Since the mean weight loss is a little larger than $2s$, then a high proportion of those individuals on Diet A had a positive weight loss.

Diet B	n	50
	Mean	3.710
	SD	2.769

Thus, the sample size for Diet B is $n = 50$
The sample mean weight loss for Diet B is $= 3.710$. The average weight loss for those individuals who undertook Diet B is 3.710 kg, so the diet appears to have been effective. The sample standard deviation of the weight loss for Diet B is $s = 2.769$ kg. Since the mean weight loss is a little larger than $2s$, then a high proportion of those individuals on Diet B had a positive weight loss.

Exe 8.2B:

Diet B	n	50
	Mean	3.710
	SD	2.769
	Median	3.745
	Q1	1.953
	Q3	5.404
	IQR	3.451

The sample median weight loss for Diet B is **M = 3.745 kg**, so the diet appears to have been effective.

The sample interquartile range of the weight loss for Diet A is **IQR = 3.451 kg**. B high proportion of those individuals on Diet B had a positive weight loss, again emphasising the effectiveness of the diet.

Exe 8.3D:

Frequencies		
	Area 1	Area 2
A	11	19
B	17	30
Other	42	41
Total	70	90

Thus **19** out of 90 respondents in Area 2 preferred Brand A, **30** preferred Brand B, and the remaining **41** preferred some other brand of breakfast cereal.

Percentages		
	Area 1	Area 2
A	15.7	21.1
B	24.3	33.3
Other	60.0	45.6
Total	100	100

Thus, of the 90 respondents in Area 2, **21.1%** preferred Brand A, **33.3%** preferred Brand B, and the remaining **45.6%** preferred some other brand of breakfast cereal

Exe 8.4G:

Batch	Agent1	Agent2
1	7.7	8.5
2	9.2	9.6
3	6.8	6.4
4	9.5	9.8
5	8.7	9.3
6	6.9	7.6
7	7.5	8.2
8	7.1	7.7
9	8.7	9.4
10	9.4	8.9
11	9.4	9.7
12	8.1	9.1

t-Test: Paired Two Sample for Means

	Agent1	Agent2
Mean	8.25	8.683333333
Variance	1.059090909	1.077878788
Observations	12	12
Pearson Correlation	0.901055812	
Hypothesized Mean Difference	0	
df	11	
t Stat	-3.263938591	
P(T<=t) one-tail	0.003772997	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.007545995	
t Critical two-tail	2.20098516	
Defference in Means	-0.433333333	

*Numbers of agents were 8.25 and 8.68

*Data therefore constitute evidence: agent1 was lower than agent2

*Results: Agent2 was better

Exe 8.6C:

F-Test Two-Sample for Variances		
	<i>Variable 1</i>	<i>Variable 2</i>
Mean	52.91	44.23
Variance	233.13	190.18
Observations	60.00	60.00
df	59.00	59.00
F	1.23	
P(F<=f) one-tail	0.22	
F Critical one-tail	1.54	
p2	3.08	

F = 1.23 with 59 and 59 associated degrees of freedom, giving a two tailed p-value of **3.08**.