

Hypothesis Testing Mandatory Worksheet Activities

Results from 8.4F

Results from 8.4G

Results from 8.4F

1. Exa 8.4F.xlsx

	A	B	C	D	E	F	G	H	I
1	Store	Con1	Con2		t-Test: Paired Two Sample for Means				
2	1	141	118						
3	2	184	167			Con1	Con2		
4	3	132	137		Mean	172.6	159.4		
5	4	161	168		Variance	750.2666667	789.3777778		
6	5	176	175		Observations	10	10		
7	6	196	197		Pearson Correlation	0.863335004			
8	7	169	143		Hypothesized Mean Difference	0			
9	8	199	169		df	9			
10	9	150	123		t Stat	2.874702125			
11	10	218	197		P(T<=t) one-tail	0.009167817			
12					t Critical one-tail	1.833112933			
13					P(T<=t) two-tail	0.018335635			
14					t Critical two-tail	2.262157163			
15					t-Test: Paired Two Sample for Means				
16					Difference in Means	13.2			
17									
18									

Results from 8.4G

	A	B	C	D	E	F	G
1	Batch	Agent1	Agent2		t-Test: Paired Two Sample for Means		
2	1	7.7	8.5			Agent1	Agent2
3	2	9.2	9.6		Mean	8.15	8.54
4	3	6.8	6.4		Variance	1.133888889	1.160444444
5	4	9.5	9.8		Observations	10	10
6	5	8.7	9.3		Pearson Correlation	0.904704895	
7	6	6.9	7.6		Hypothesized Mean Difference	0	
8	7	7.1	7.7		df	9	
9	8	8.7	9.4		t Stat	-2.63671387	
10	9	9.4	8.9		P(T<=t) one-tail	0.01352958	
11	10	9.4	9.7		t Critical one-tail	1.833112933	
12	11	8.1	9.1		P(T<=t) two-tail	0.02705916	
13	12				t Critical two-tail	2.262157163	
14					Difference in Means	-0.39	
15							
16							
17							
18							

Exercise 8.4

The mean filtration performances for Agent 1 and Agent 2 were recorded as 8.15 and 8.54, respectively, indicating a better performance by Agent 2 with a difference of 0.39, suggesting Agent1 has a lower mean impurity than Agent2.

The results of a two-tailed t-test yielded a t-value of -2.637 with 9 degrees of freedom, leading to a two-tailed p-value of 0.027. This value indicates that the difference is statistically significant at the 5% level, supporting the higher effectiveness of Agent 2 as a filtration agent.

Table of Comparison Between Agent 1 and Agent 2:

Statistical Measure	Agent 1	Agent 2	Difference
Mean Filtration Performance	8.15	8.54	0.39
Degrees of Freedom	-	-	9
T-Value (Two-Tailed)	-	-	-2.637
P-Value (Two-Tailed)	-	-	0.027
P-Value (One-Tailed)	-	-	0.014
Significance Level (One-Tailed)	-	-	Not significant at 1%