MGN909-DATA ANALYSIS USING SPSS

CA-2

Submitted To: Submitted By:

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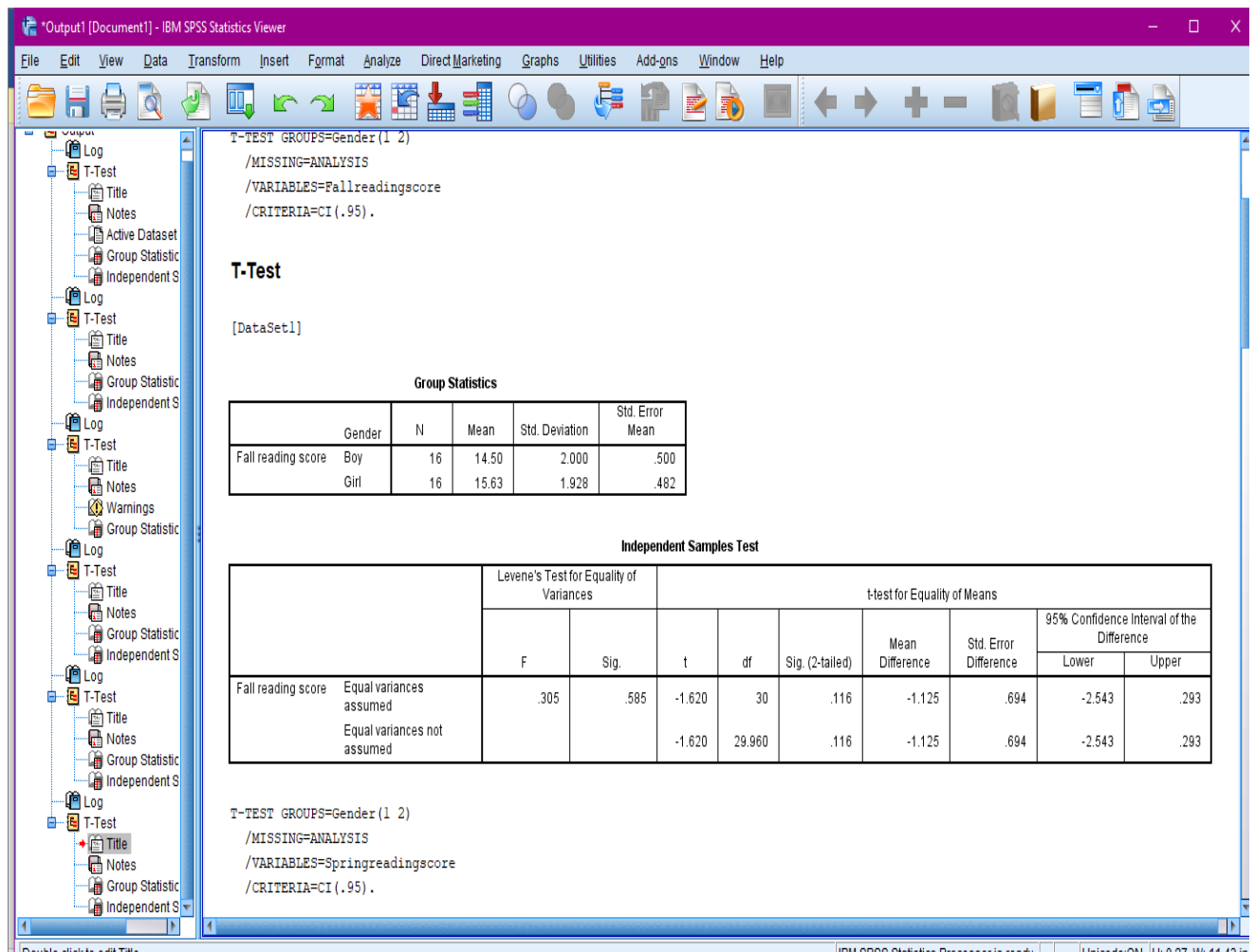
CA-2   **11616140**

                                        KOE12-A10

Question-1: Is there a significant difference between boys' and girls' fall reading scores?

Answer:-


```
T-TEST GROUPS=Gender(1 2)
    /MISSING=ANALYSIS
    /VARIABLES=Fallreadingscore
    /CRITERIA=CI(.95).
```

T-Test

[DataSet1]

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Fall reading score	Boy	16	14.50	2.000	.500
	Girl	16	15.63	1.928	.482

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Fall reading score	Equal variances assumed	.305	.585	-1.620	30	.116	-1.125	.694	-2.543	.293
	Equal variances not assumed			-1.620	29.960	.116	-1.125	.694	-2.543	.293

```
T-TEST GROUPS=Gender(1 2)
    /MISSING=ANALYSIS
    /VARIABLES=Springreadingscore
    /CRITERIA=CI(.95).
```
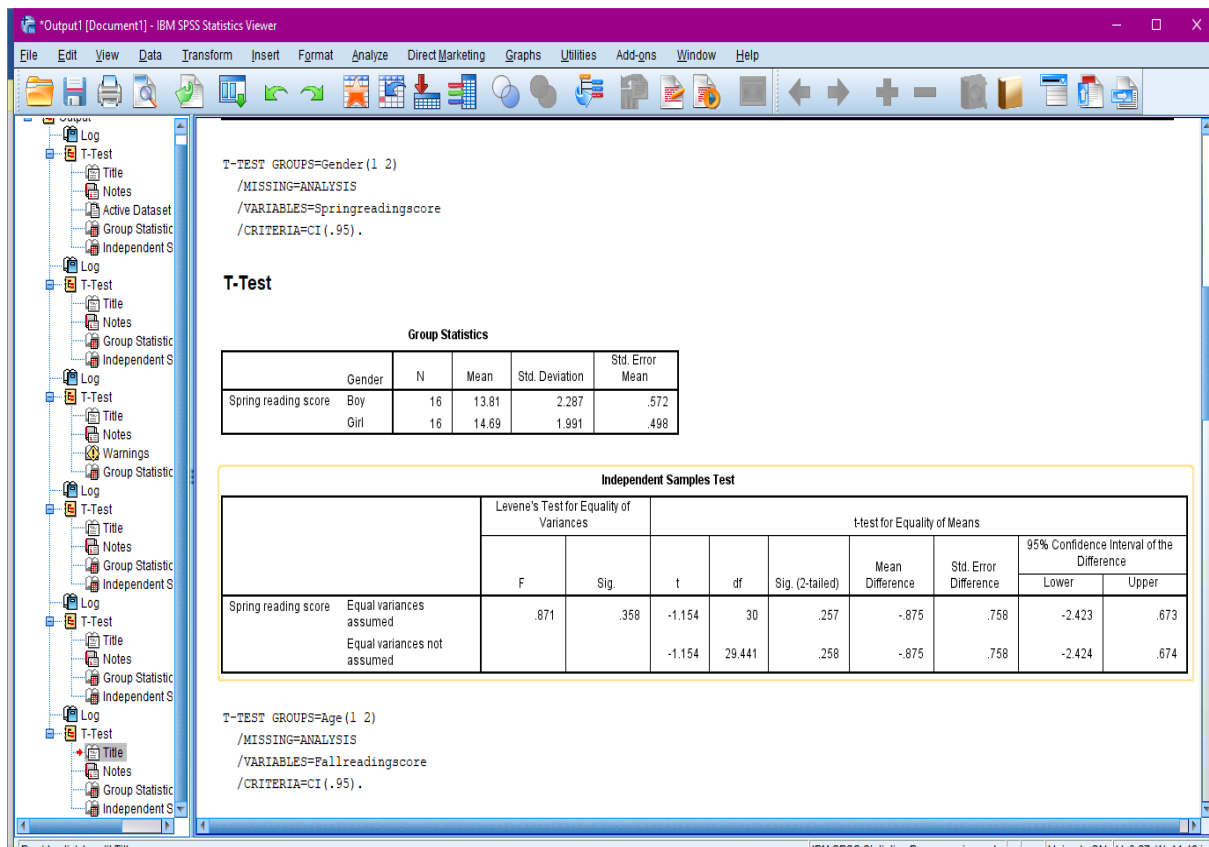
Explanation:

Mean score of boys = 14.5, SD =2.0
Mean score of girls = 15.6, SD = 1.9
t = -1.620, df = 30, p = .116

The Significance of this test is the number in the second column is high (greater than 0.05 or so), the values in the first row are applicable means here row one is valid. The significance of the T test that is two-tailed significance 0.116 is greater than the 0.05 that means Null Hypothesis is accepted and there is no significant difference in the two means.So here in this scenario there is no significant difference between boys and girls in the fall reading scores.

Question-2: Is there a significant difference between boys' and girls' spring reading scores?
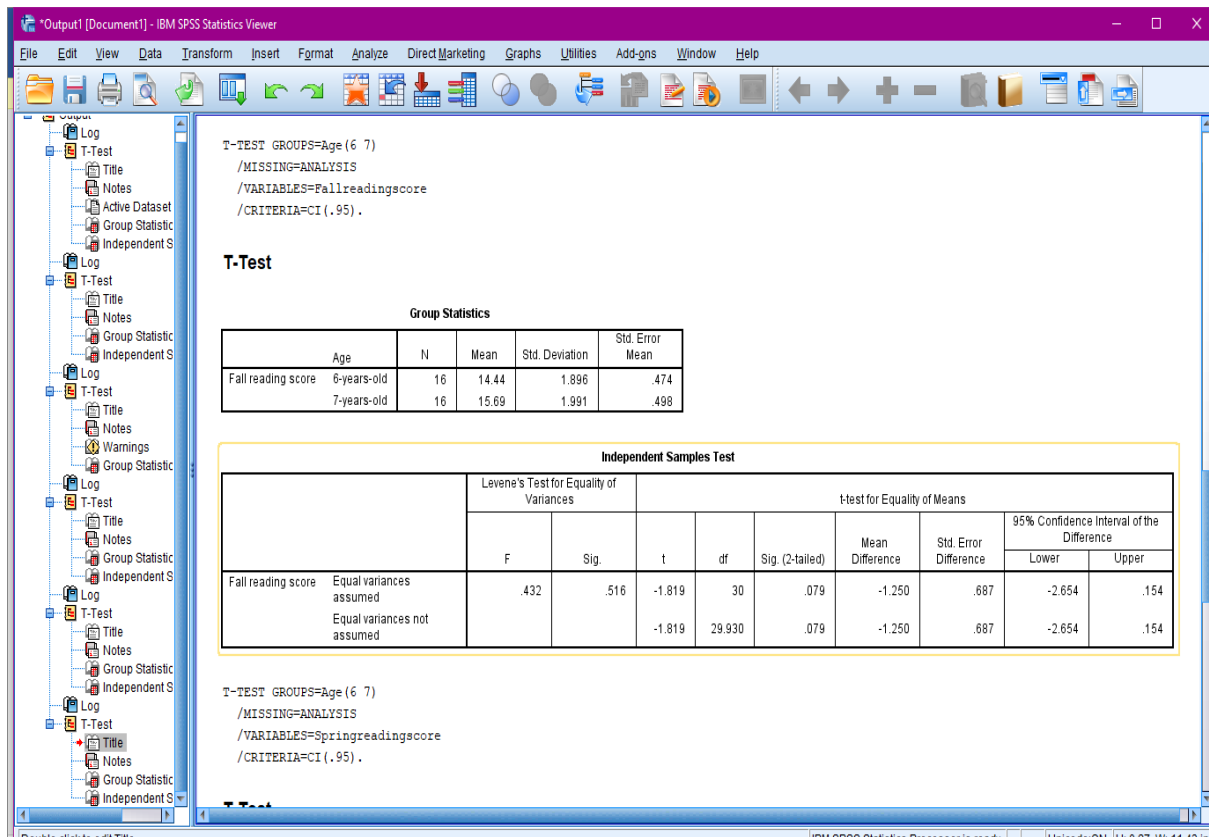
Answer:-


```
T-TEST GROUPS=Gender(1 2)
    /MISSING=ANALYSIS
    /VARIABLES=Springreadingscore
    /CRITERIA=CI(.95).
```

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Spring reading score	Boy	16	13.81	2.287	.572
	Girl	16	14.69	1.991	.498

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Spring reading score	Equal variances assumed	.871	.358	-1.154	30	.257	-.875	.758	-2.423	.673
	Equal variances not assumed			-1.154	29.441	.258	-.875	.758	-2.424	.674

```
T-TEST GROUPS=Age(1 2)
    /MISSING=ANALYSIS
    /VARIABLES=Fallreadingscore
    /CRITERIA=CI(.95).
```

Explanation:-

Mean score of boys = 13.8, SD =2.2
Mean score of girls = 14.6, SD = 1.9
$t = -1.15$, $df = 30$, $p = .25$

The Significance of this test is the number in the second column is high (greater than 0.05 or so), the values in the first row are applicable means here row one is valid. The significance of the T test that is, the two-tailed significance 0.257 is greater than the 0.05 that means Null Hypothesis is accepted and there is no significant difference in the two means.So here in this scenario there is no significant difference between boys and girls in the spring reading scores.

Question-3:- Is there a significant difference between 6-year-olds' and 7-year-olds' fall reading scores?

Answer:-

Explanation:-

The significance of the this T-test is, the two-tailed significance 0.079 is greater than the 0.05 that means Null Hypothesis is accepted and there is no significant difference in the two means. So here in this scenario there is no significant difference between 6-years-old and 7-years-old in the fall reading scores.

Question-4: Is there a significant difference between 6-year-olds' and 7-year-olds' spring reading scores?
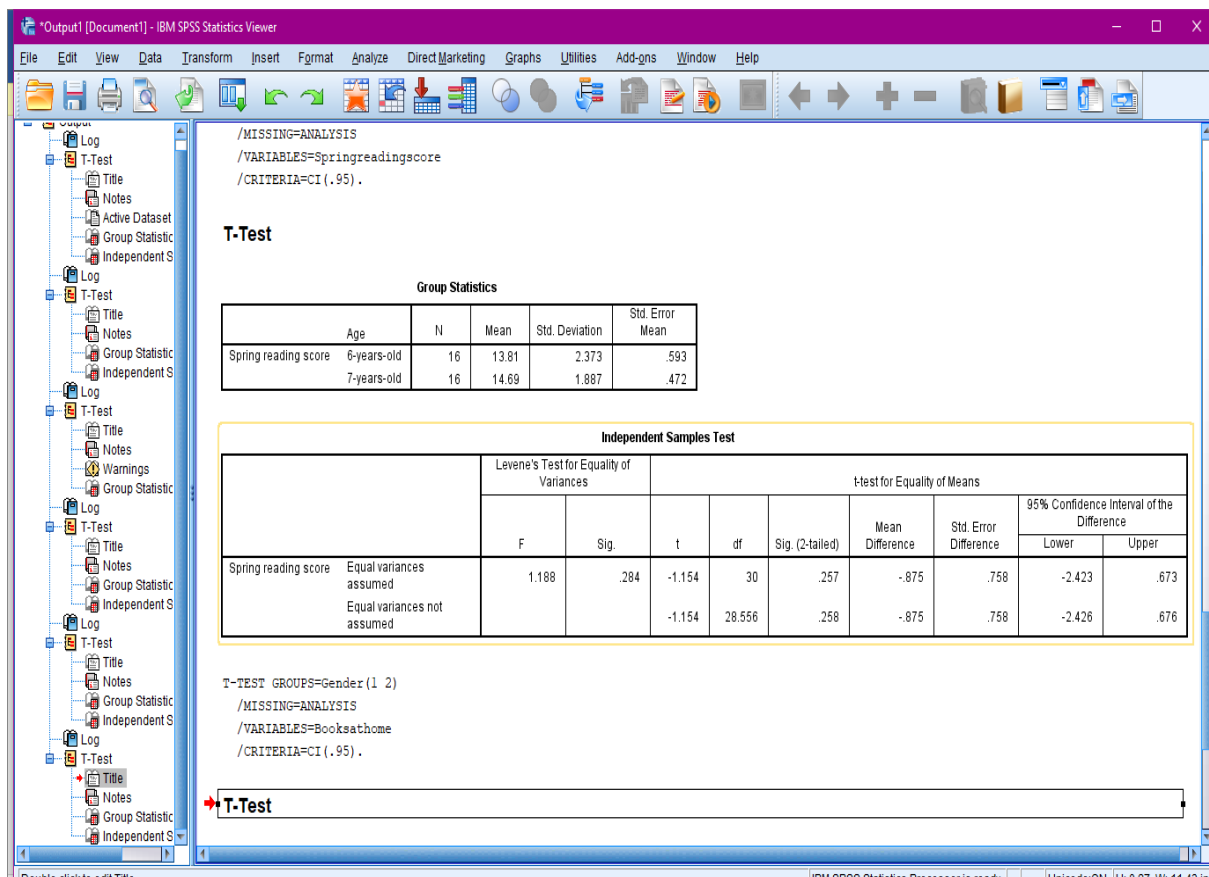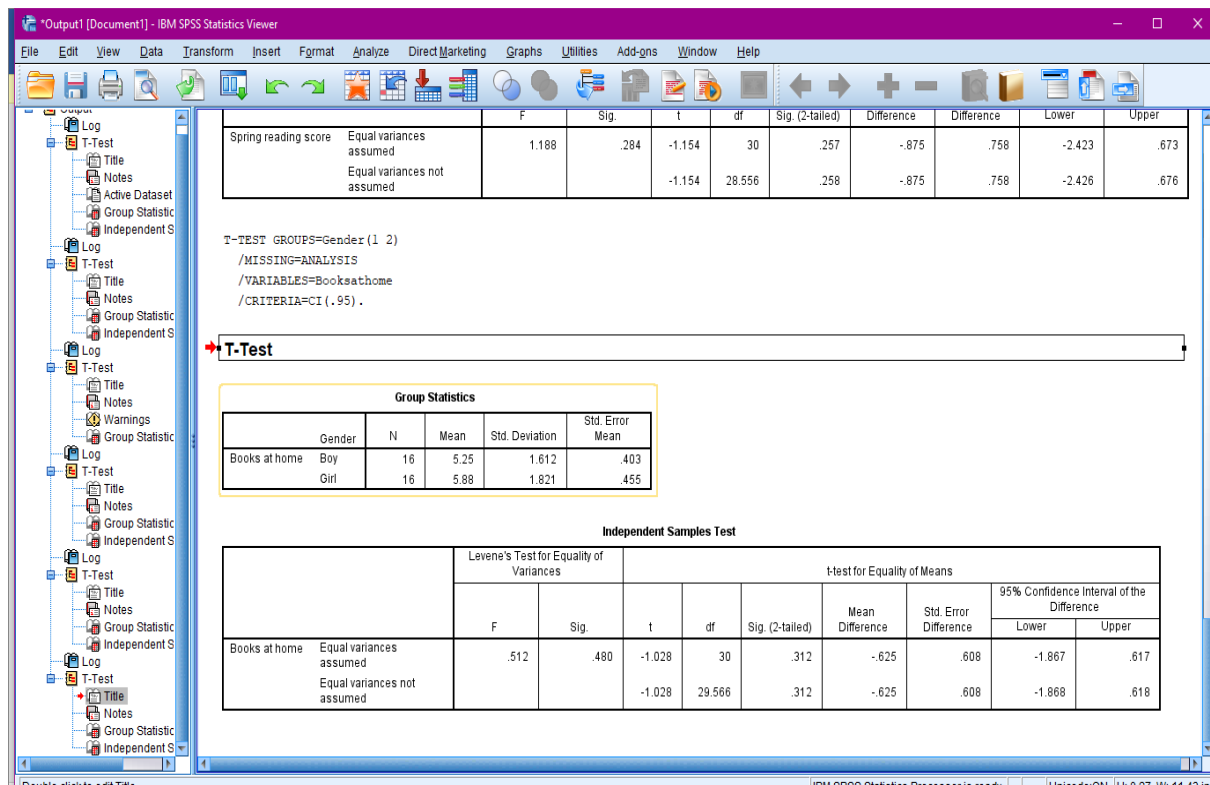
Answer:

Explanation:-

The significance of this test is the number in the second column is high (greater than 0.05 or so), the values in the first row are applicable means here row one is valid. The significance of the T test that is, the two-tailed significance 0.257 is greater than the 0.05 that means Null Hypothesis is accepted and there is no significant difference in the two means.So here in this scenario there is no significant difference between 6-years-old and 7-years-old in the spring reading scores.

Question-5: **Is there a significant difference between boys and girls with respect to the number of books in the home?**

Answer:-

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Spring reading score	Equal variances assumed	1.188	.284	-1.154	30	.257	-.875	.758	-2.423	.673
	Equal variances not assumed			-1.154	28.556	.258	-.875	.758	-2.426	.676

```
T-TEST GROUPS=Gender(1 2)
    /MISSING=ANALYSIS
    /VARIABLES=Booksathome
    /CRITERIA=CI(.95).
```

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Books at home	Boy	16	5.25	1.612	.403
	Girl	16	5.88	1.821	.455

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Books at home	Equal variances assumed	.512	.480	-1.028	30	.312	-.625	.608	-1.867	.617
	Equal variances not assumed			-1.028	29.566	.312	-.625	.608	-1.868	.618

Explanation:-

   The significance of this test is the number in the second column is high (greater than 0.05 or so), the values in the first row are applicable means here row one is valid. The significance of the T test that is, the two-tailed significance 0.312 is greater than the 0.05 that means Null Hypothesis is accepted and there is no significant difference in the two means. So,Here in this scenario there is no significant difference between boys and girls who have books at home.

Question-6:- Is there any association between gender and flavour of an ice-cream is statistically significant or not?

Answer:-

			Cherry 13	Cherry 15	Total
V1	Female	Count	0	1	1
		% within V1	0.0%	100.0%	100.0%
		% within Cherry	0.0%	100.0%	50.0%
		% of Total	0.0%	50.0%	50.0%
	Male	Count	1	0	1
		% within V1	100.0%	0.0%	100.0%
		% within Cherry	100.0%	0.0%	50.0%
		% of Total	50.0%	0.0%	50.0%
Total		Count	1	1	2
		% within V1	50.0%	50.0%	100.0%
		% within Cherry	100.0%	100.0%	100.0%
		% of Total	50.0%	50.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.000[a]	1	.157		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	2.773	1	.096		
Fisher's Exact Test				1.000	.500
N of Valid Cases	2				

a. 4 cells (100.0%) have expected count less than 5. The minimum expected count is .50.

b. Computed only for a 2x2 table

This result shows that, 0.157 is the Asymptotic Significance result of our Chi-Square Tests on this sceniro question.

Question-7: State the appropriate conclusion for a chi-square test for goodness of fit for the given information?

Answer:-

1) **P= 0.10**
   dof= 8
   Chi-Square = 13.2

   The Value of p is greater than the 0.05 (5% significance level) that means our result is statistically not significant and we will accept the Null hypothesis that says there is no significant association among the data sample, that means our variables is independent of each other.

2) **P = 0.025**
   dof = 17
   Chi-Square= 27.008

   The Value of p is 0.025 is less than the 0.05 (5% significance level) that means our result is statistically significant and we will accept the Alternate hypothesis that says there is a significant association among the data sample, that means our variables is dependent on each other.

Question-8:   Is the association between fall reading scores and spring reading scores with number of books is statistically significant?

Answer:-

Spring reading score * Books at home

Crosstab

						Books at home					Total
			3	4	5	6	7	8	9	
Spring reading score	11	Count	1	0	0	2	0	0	0	3
		% within Spring reading score	33.3%	0.0%	0.0%	66.7%	0.0%	0.0%	0.0%	100.0%
		% within Books at home	25.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	9.4%
		% of Total	3.1%	0.0%	0.0%	6.3%	0.0%	0.0%	0.0%	9.4%
	12	Count	0	0	3	2	0	0	1	6
		% within Spring reading score	0.0%	0.0%	50.0%	33.3%	0.0%	0.0%	16.7%	100.0%
		% within Books at home	0.0%	0.0%	50.0%	33.3%	0.0%	0.0%	50.0%	18.8%
		% of Total	0.0%	0.0%	9.4%	6.3%	0.0%	0.0%	3.1%	18.8%
	13	Count	1	0	0	1	1	0	0	3
		% within Spring reading score	33.3%	0.0%	0.0%	33.3%	33.3%	0.0%	0.0%	100.0%
		% within Books at home	25.0%	0.0%	0.0%	16.7%	16.7%	0.0%	0.0%	9.4%
		% of Total	3.1%	0.0%	0.0%	3.1%	3.1%	0.0%	0.0%	9.4%
	14	Count	1	1	0	1	2	1	0	6
		% within Spring reading score	16.7%	16.7%	0.0%	16.7%	33.3%	16.7%	0.0%	100.0%
		% within Books at home	25.0%	16.7%	0.0%	16.7%	33.3%	50.0%	0.0%	18.8%
		% of Total	3.1%	3.1%	0.0%	3.1%	6.3%	3.1%	0.0%	18.8%
	15	Count	0	1	2	0	1	0	1	5

(continued)

			Books at home							Total
			3	4	5	6	7	8	9	
		% within Books at home	25.0%	0.0%	16.7%	0.0%	0.0%	50.0%	0.0%	9.4%
		% of Total	3.1%	0.0%	3.1%	0.0%	0.0%	3.1%	0.0%	9.4%
Total		Count	4	6	6	6	6	2	2	32
		% within Spring reading score	12.5%	18.8%	18.8%	18.8%	18.8%	6.3%	6.3%	100.0%
		% within Books at home	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	12.5%	18.8%	18.8%	18.8%	18.8%	6.3%	6.3%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	44.711[a]	42	.359
Likelihood Ratio	50.339	42	.177
Linear-by-Linear Association	.169	1	.681
N of Valid Cases	32		

a. 56 cells (100.0%) have expected count less than 5. The minimum expected count is .19.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	1.182	.359
	Cramer's V	.483	.359
N of Valid Cases		32	