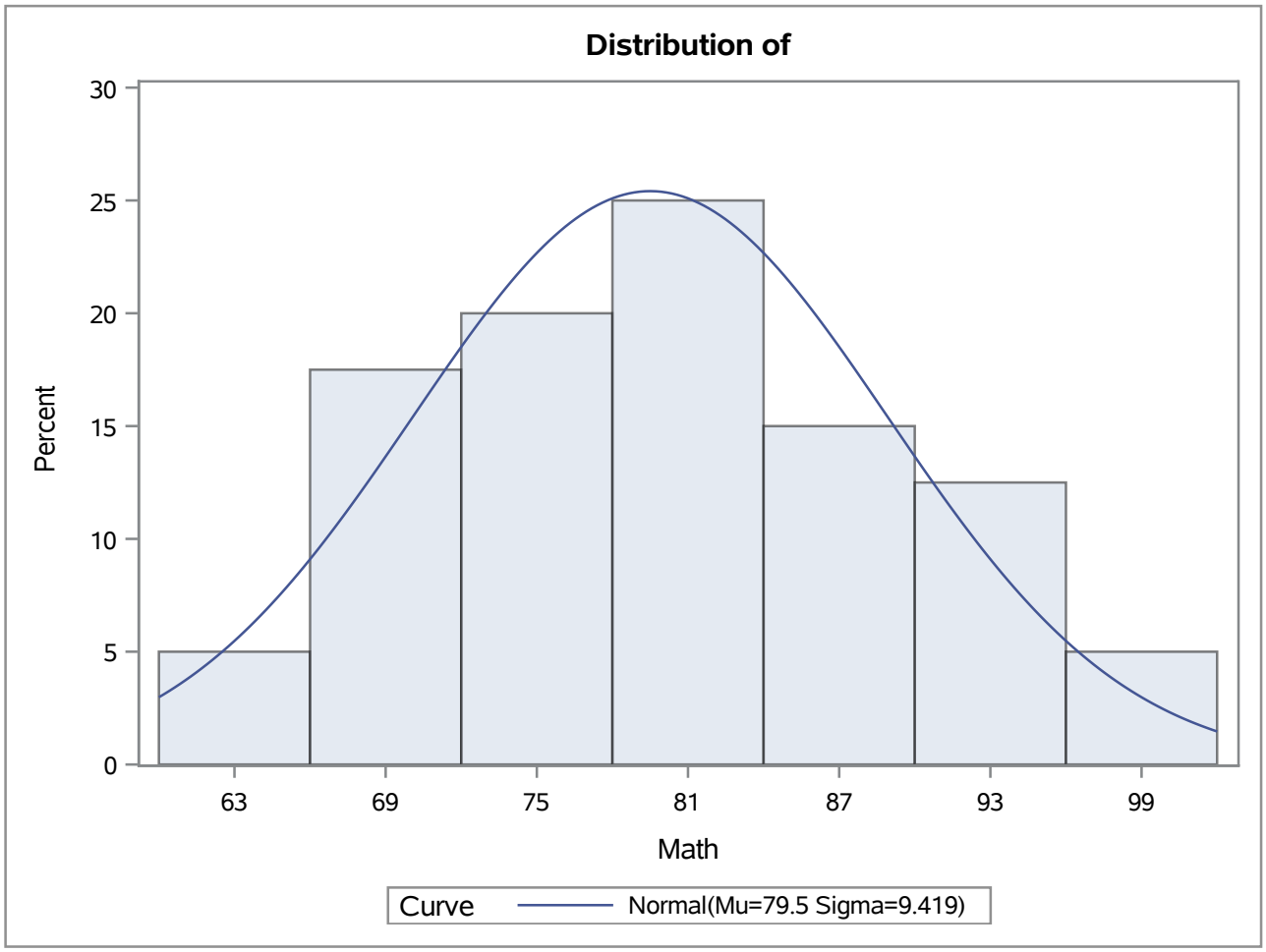
The UNIVARIATE Procedure



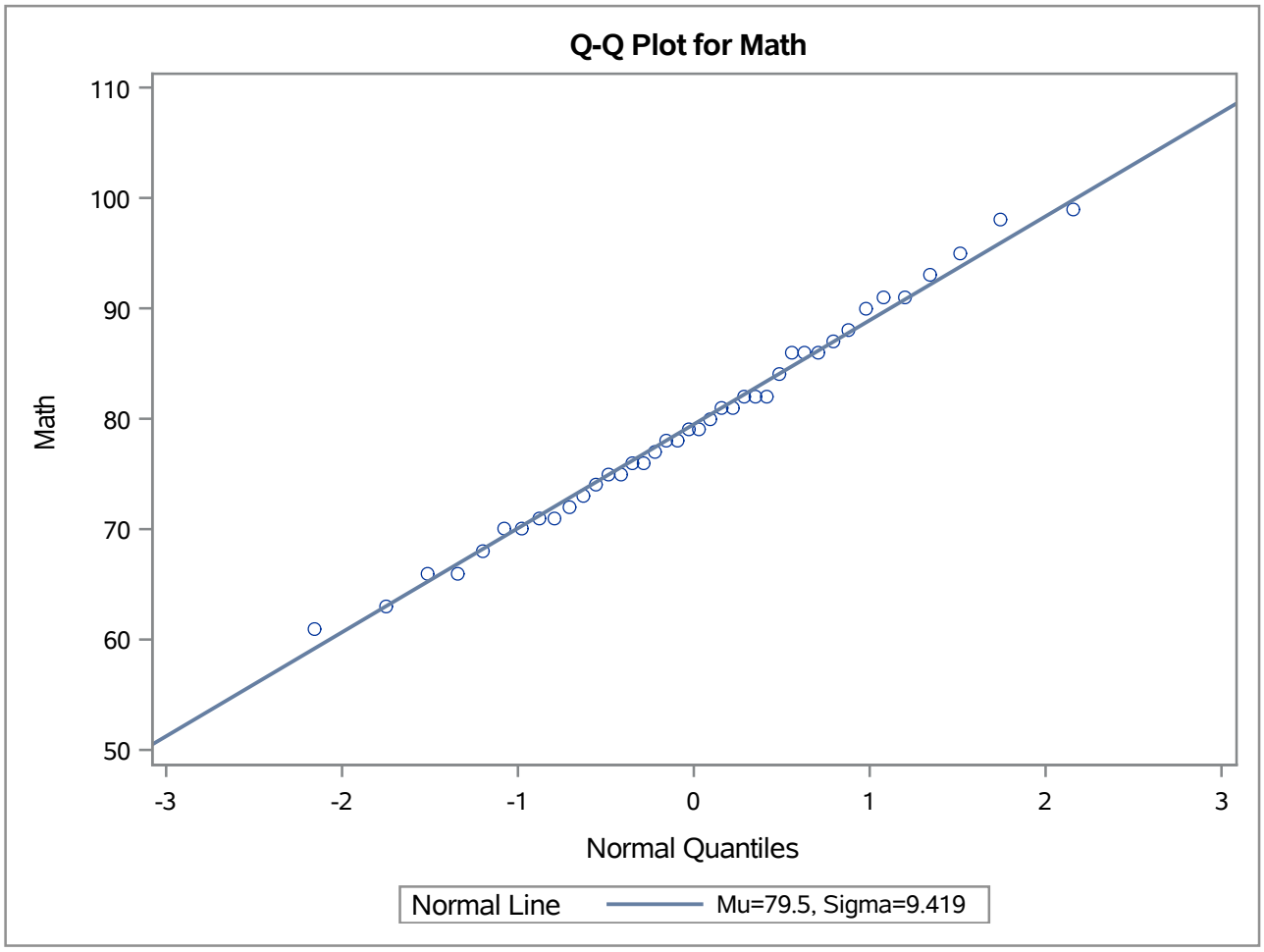
The UNIVARIATE Procedure
Fitted Normal Distribution for Math

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	79.5
Std Dev	Sigma	9.419021

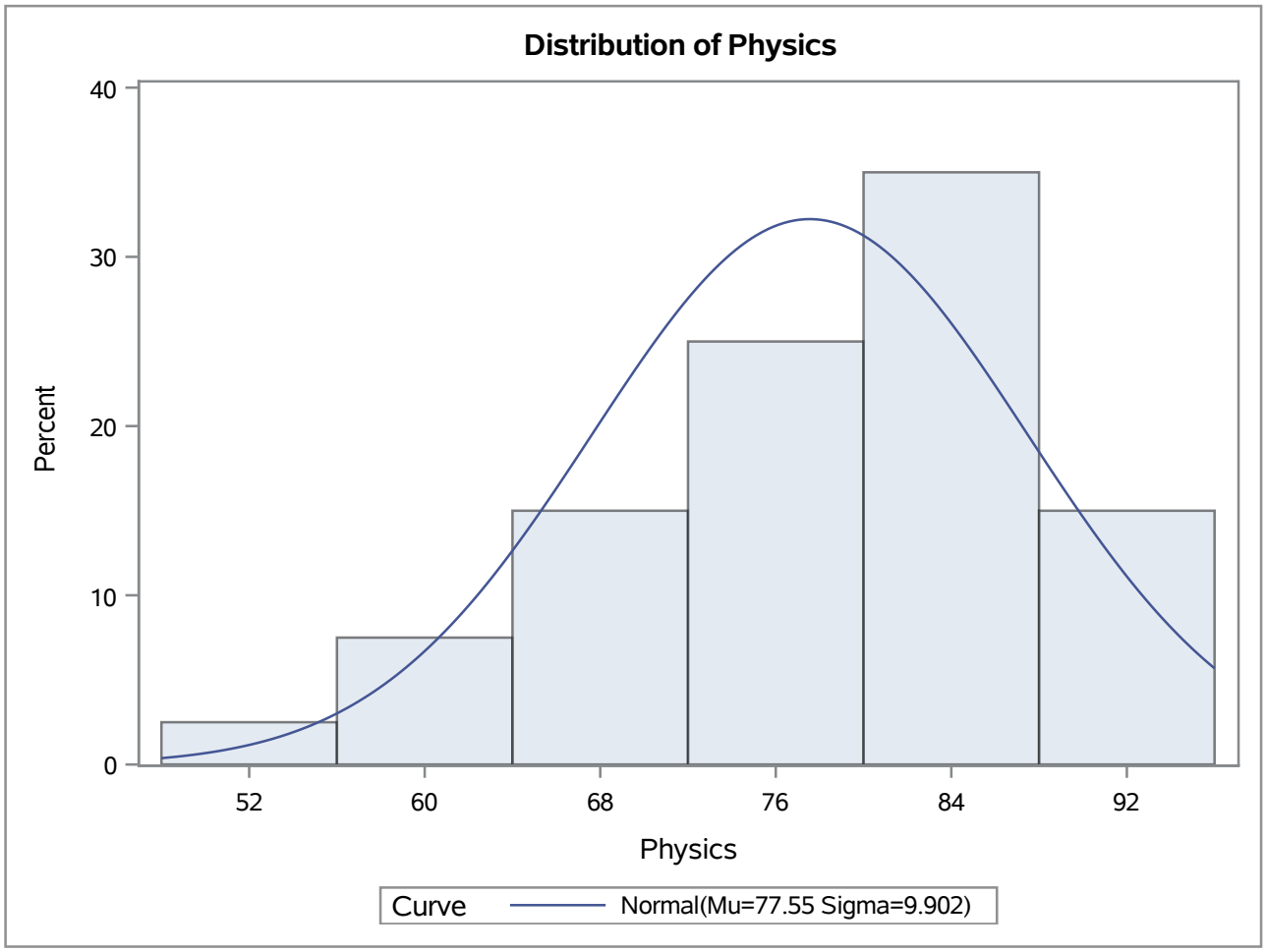
Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.07034282	**Pr > D**	>0.150
Cramer-von Mises	**W-Sq**	0.01815604	**Pr > W-Sq**	>0.250
Anderson-Darling	**A-Sq**	0.12854253	**Pr > A-Sq**	>0.250

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	61.0000	57.5881
5.0	64.5000	64.0071
10.0	67.0000	67.4290
25.0	72.5000	73.1470
50.0	79.0000	79.5000
75.0	86.0000	85.8530
90.0	92.0000	91.5710
95.0	96.5000	94.9929
99.0	99.0000	101.4119

The UNIVARIATE Procedure



The UNIVARIATE Procedure



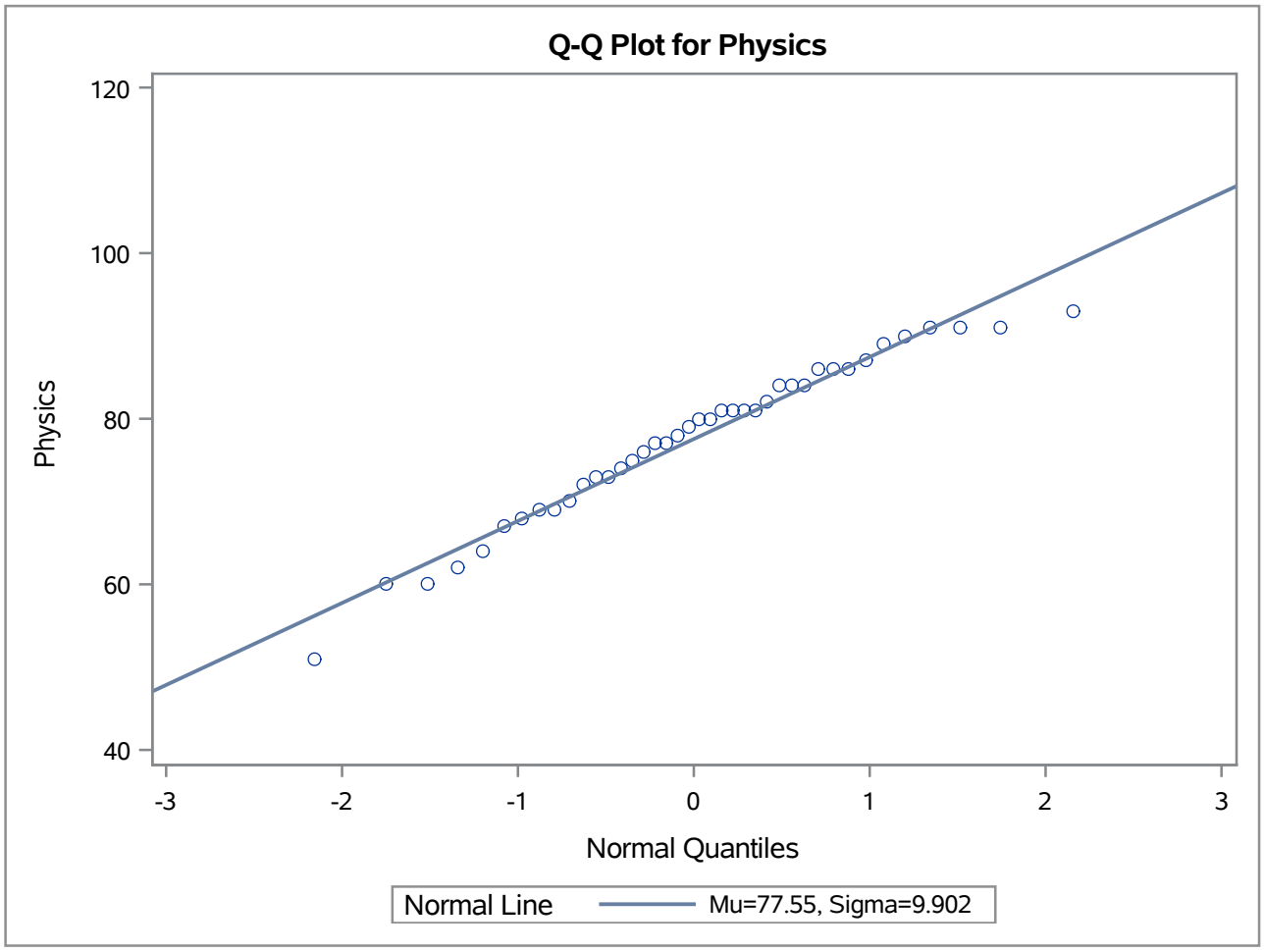
The UNIVARIATE Procedure
Fitted Normal Distribution for Physics

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	77.55
Std Dev	Sigma	9.901955

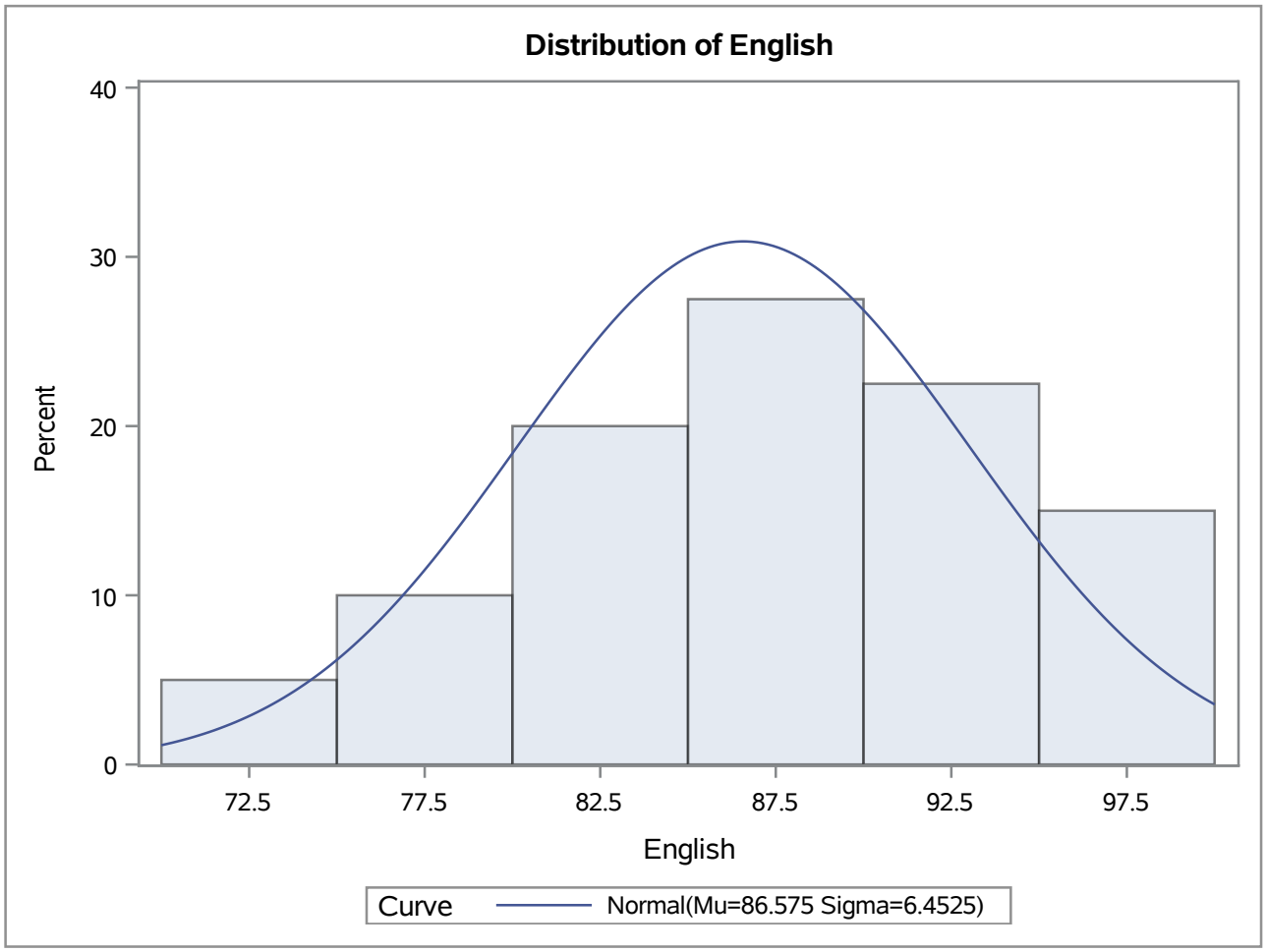
Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.09771068	**Pr > D**	>0.150
Cramer-von Mises	**W-Sq**	0.05623708	**Pr > W-Sq**	>0.250
Anderson-Darling	**A-Sq**	0.38133060	**Pr > A-Sq**	>0.250

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	51.0000	54.5146
5.0	60.0000	61.2627
10.0	63.0000	64.8601
25.0	71.0000	70.8712
50.0	79.5000	77.5500
75.0	85.0000	84.2288
90.0	90.5000	90.2399
95.0	91.0000	93.8373
99.0	93.0000	100.5854

The UNIVARIATE Procedure



The UNIVARIATE Procedure



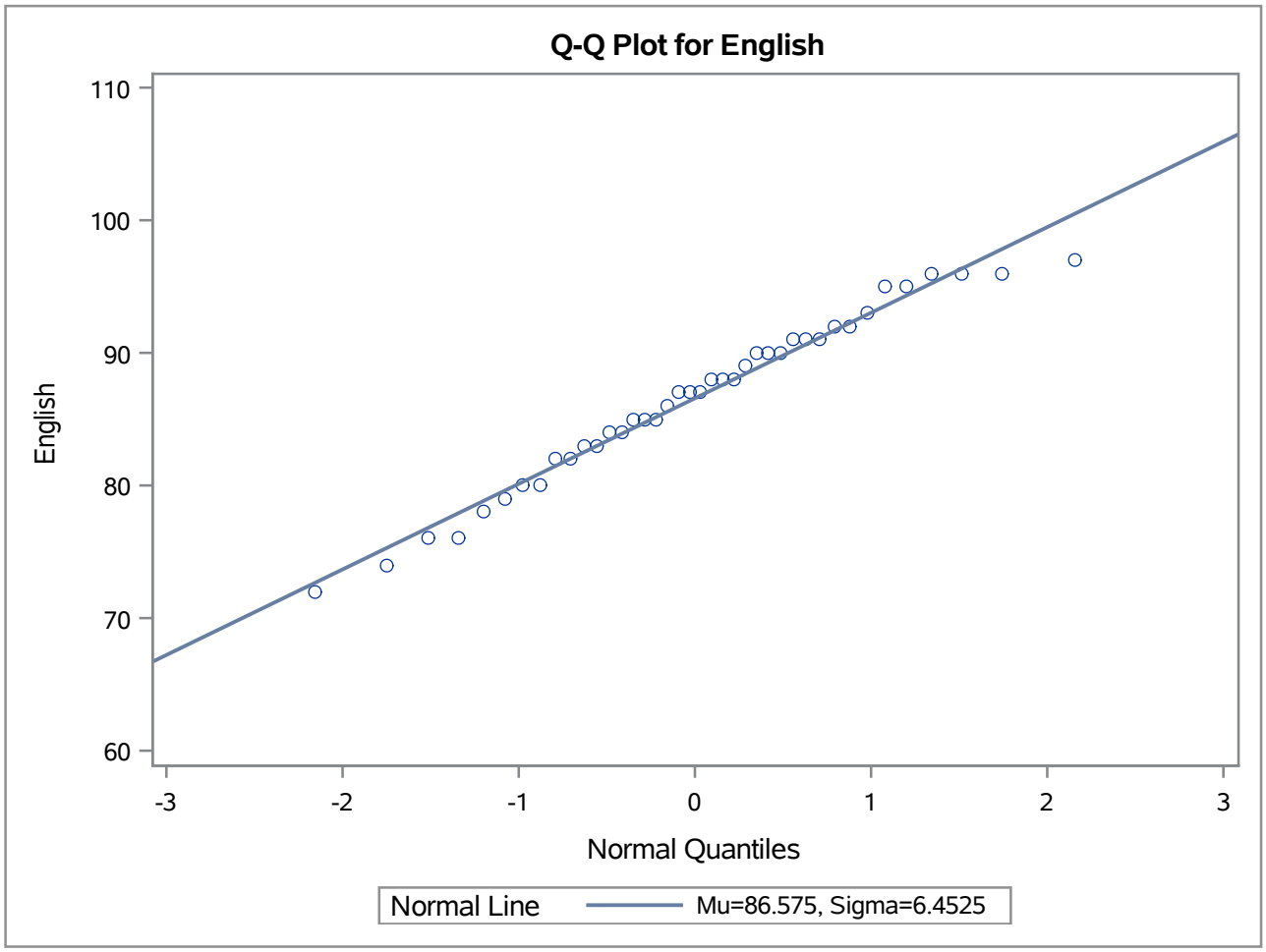
The UNIVARIATE Procedure
Fitted Normal Distribution for English

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	86.575
Std Dev	Sigma	6.452539

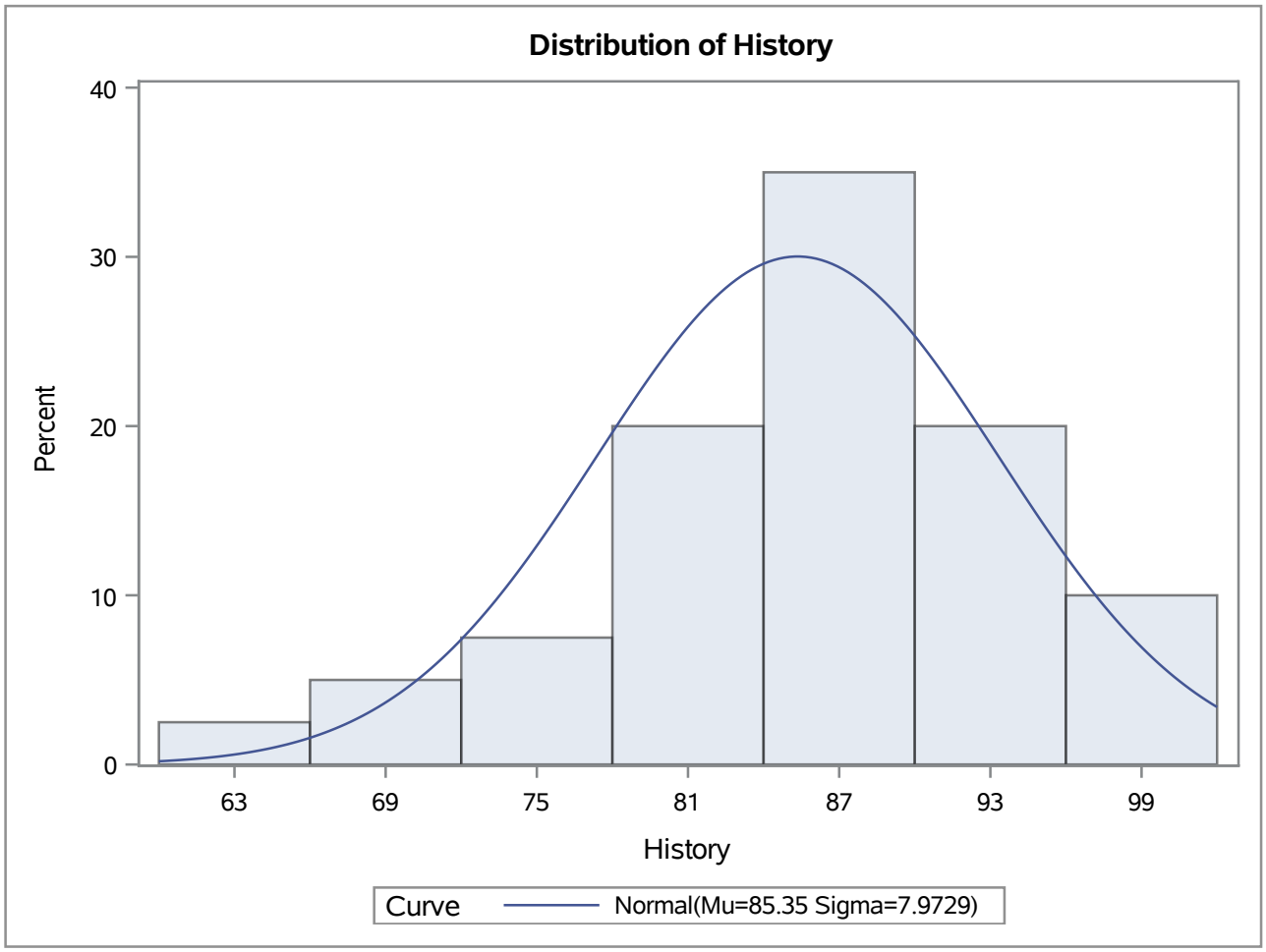
Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.07722090	**Pr > D**	>0.150
Cramer-von Mises	**W-Sq**	0.03448985	**Pr > W-Sq**	>0.250
Anderson-Darling	**A-Sq**	0.27124408	**Pr > A-Sq**	>0.250

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	72.0000	71.5642
5.0	75.0000	75.9615
10.0	77.0000	78.3057
25.0	82.5000	82.2228
50.0	87.0000	86.5750
75.0	91.0000	90.9272
90.0	95.5000	94.8443
95.0	96.0000	97.1885
99.0	97.0000	101.5858

The UNIVARIATE Procedure



The UNIVARIATE Procedure



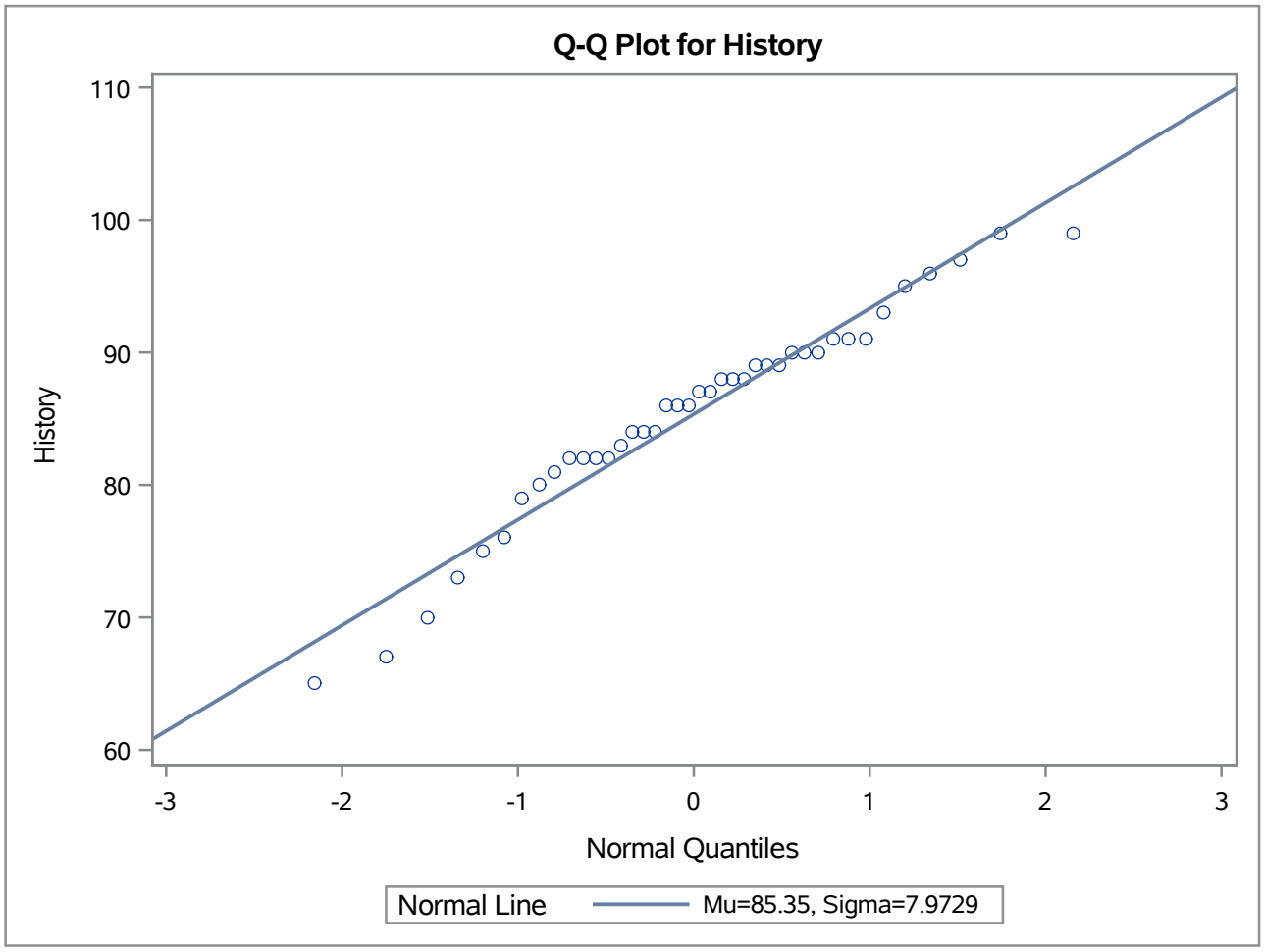
The UNIVARIATE Procedure
Fitted Normal Distribution for History

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	85.35
Std Dev	Sigma	7.972871

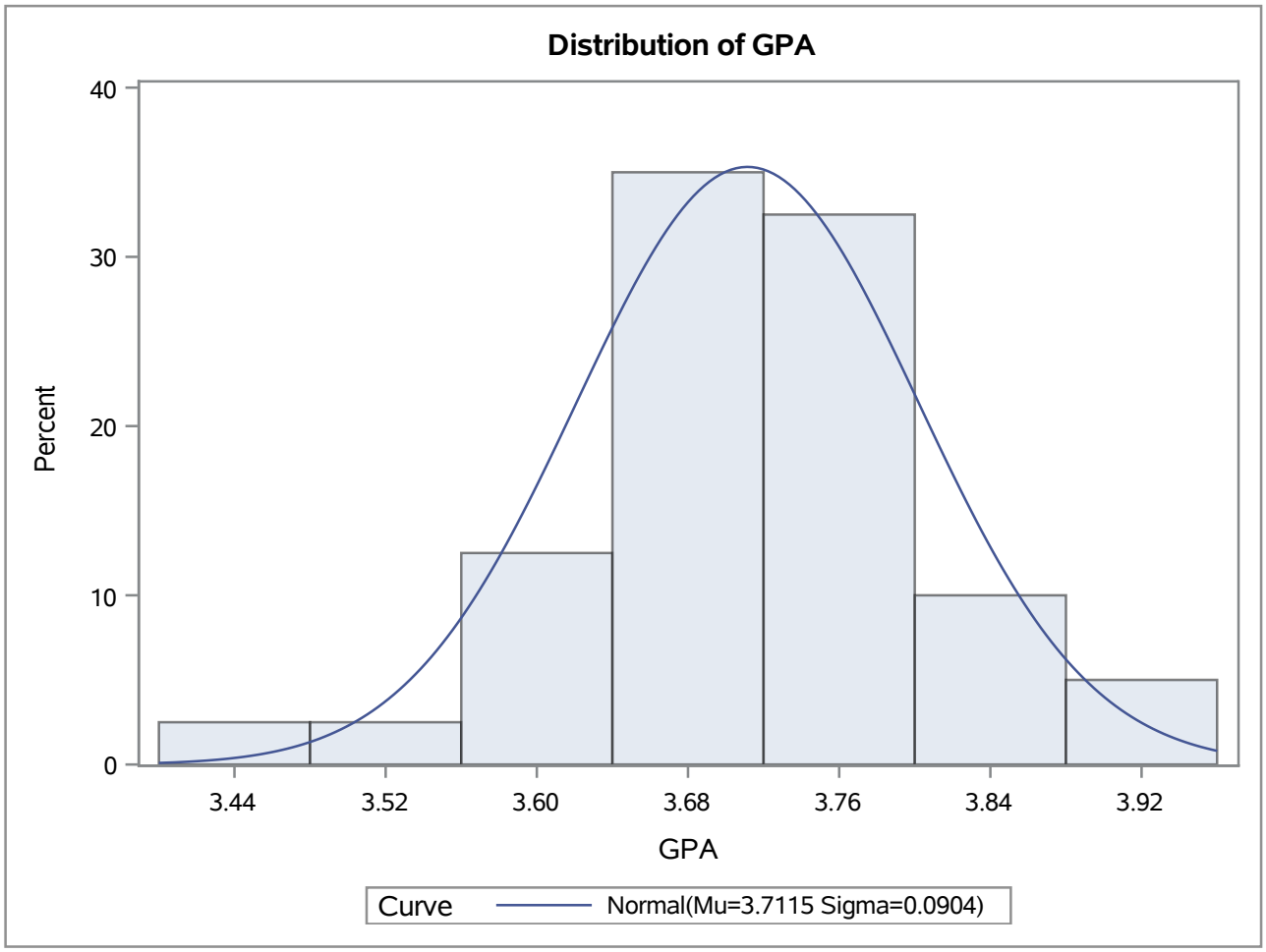
Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.11217885	**Pr > D**	>0.150
Cramer-von Mises	**W-Sq**	0.09133680	**Pr > W-Sq**	0.144
Anderson-Darling	**A-Sq**	0.55936397	**Pr > A-Sq**	0.143

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	65.0000	66.8023
5.0	68.5000	72.2358
10.0	74.0000	75.1324
25.0	82.0000	79.9724
50.0	86.5000	85.3500
75.0	90.0000	90.7276
90.0	95.5000	95.5676
95.0	98.0000	98.4642
99.0	99.0000	103.8977

The UNIVARIATE Procedure



The UNIVARIATE Procedure



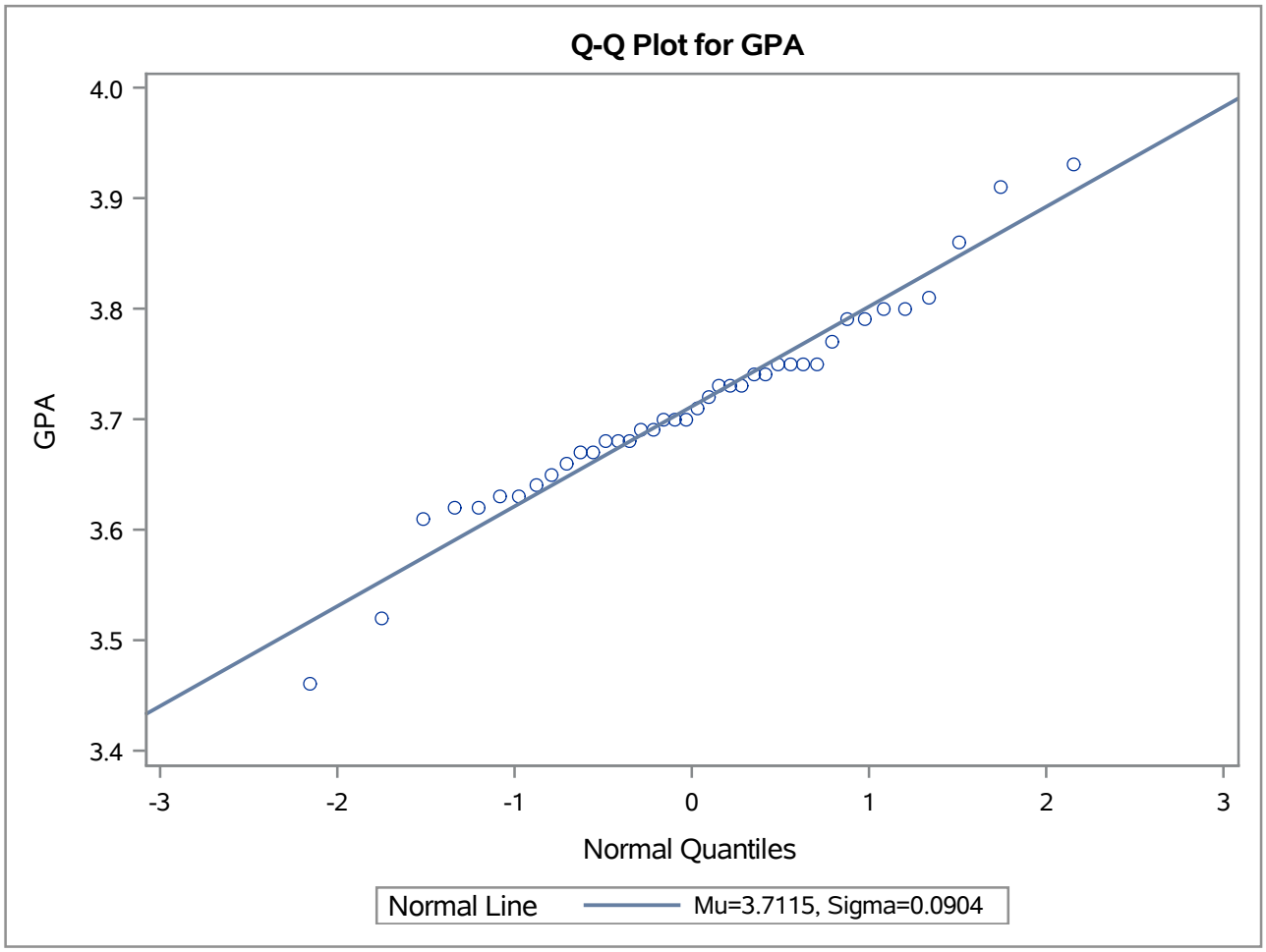
The UNIVARIATE Procedure
Fitted Normal Distribution for GPA

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	3.7115
Std Dev	Sigma	0.090371

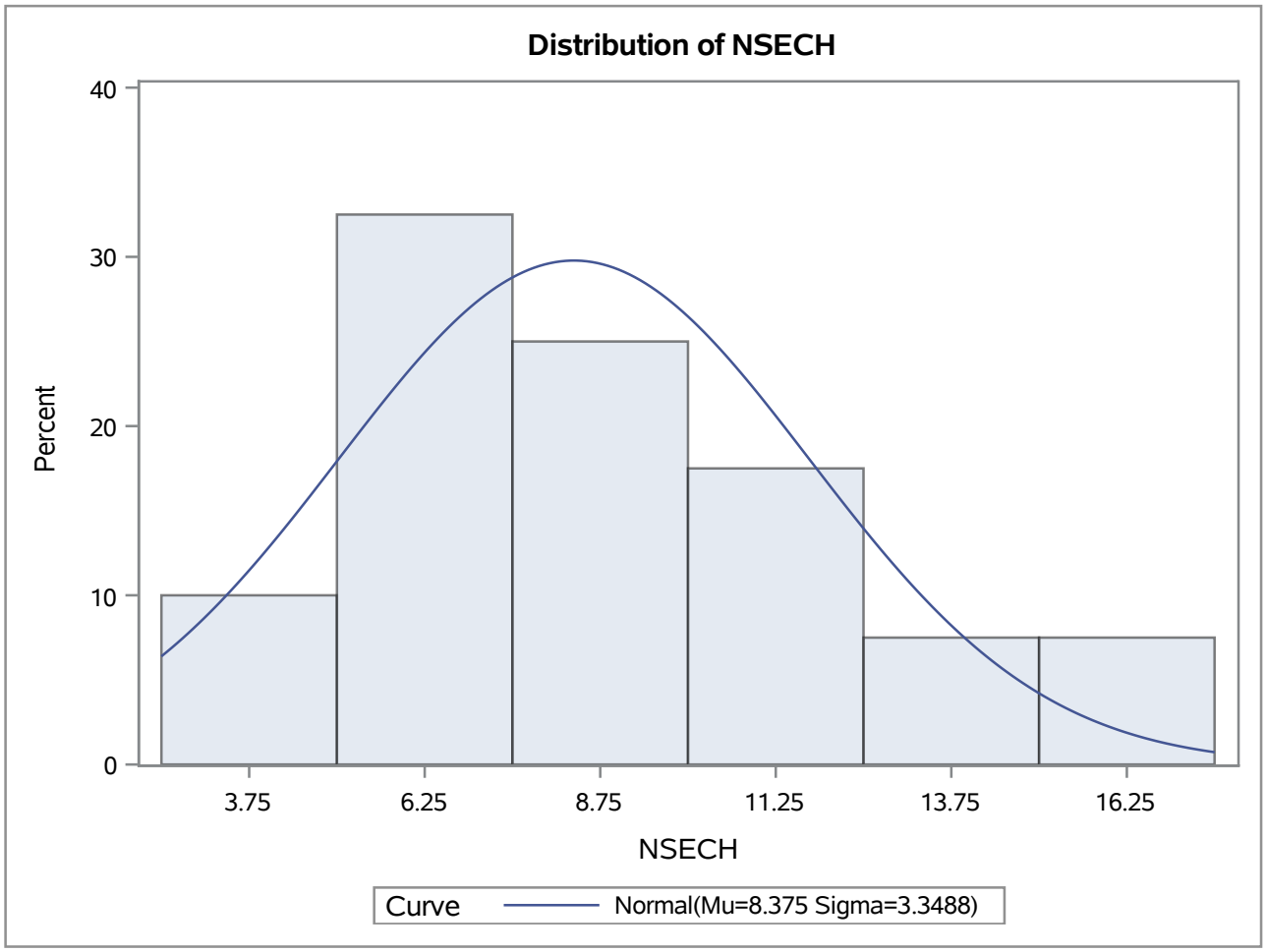
Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.11004610	**Pr > D**	>0.150
Cramer-von Mises	**W-Sq**	0.06150884	**Pr > W-Sq**	>0.250
Anderson-Darling	**A-Sq**	0.45370026	**Pr > A-Sq**	>0.250

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	3.46000	3.50127
5.0	3.56500	3.56285
10.0	3.62000	3.59568
25.0	3.66500	3.65055
50.0	3.70500	3.71150
75.0	3.75000	3.77245
90.0	3.80500	3.82732
95.0	3.88500	3.86015
99.0	3.93000	3.92173

The UNIVARIATE Procedure



The UNIVARIATE Procedure



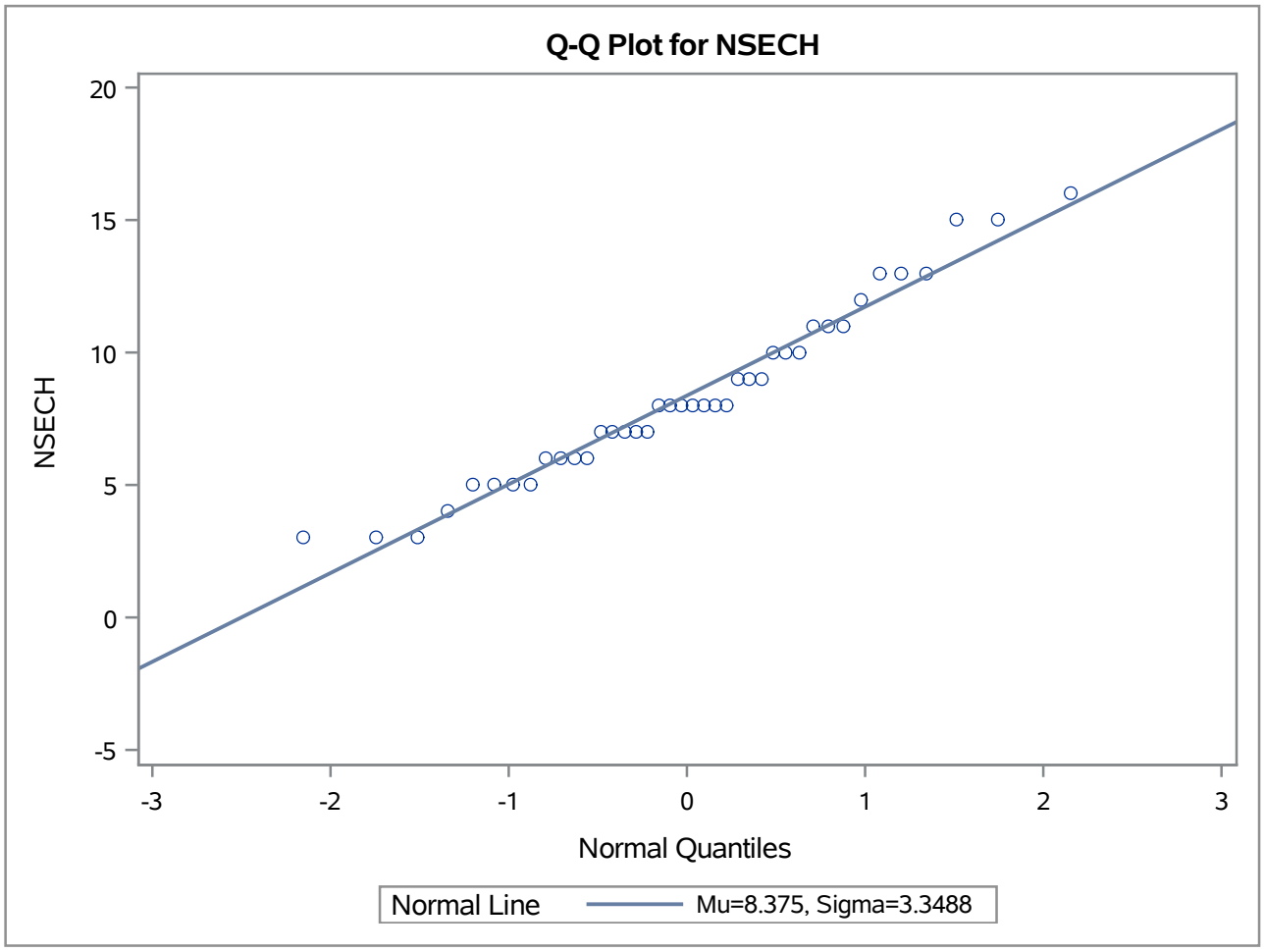
The UNIVARIATE Procedure
Fitted Normal Distribution for NSECH

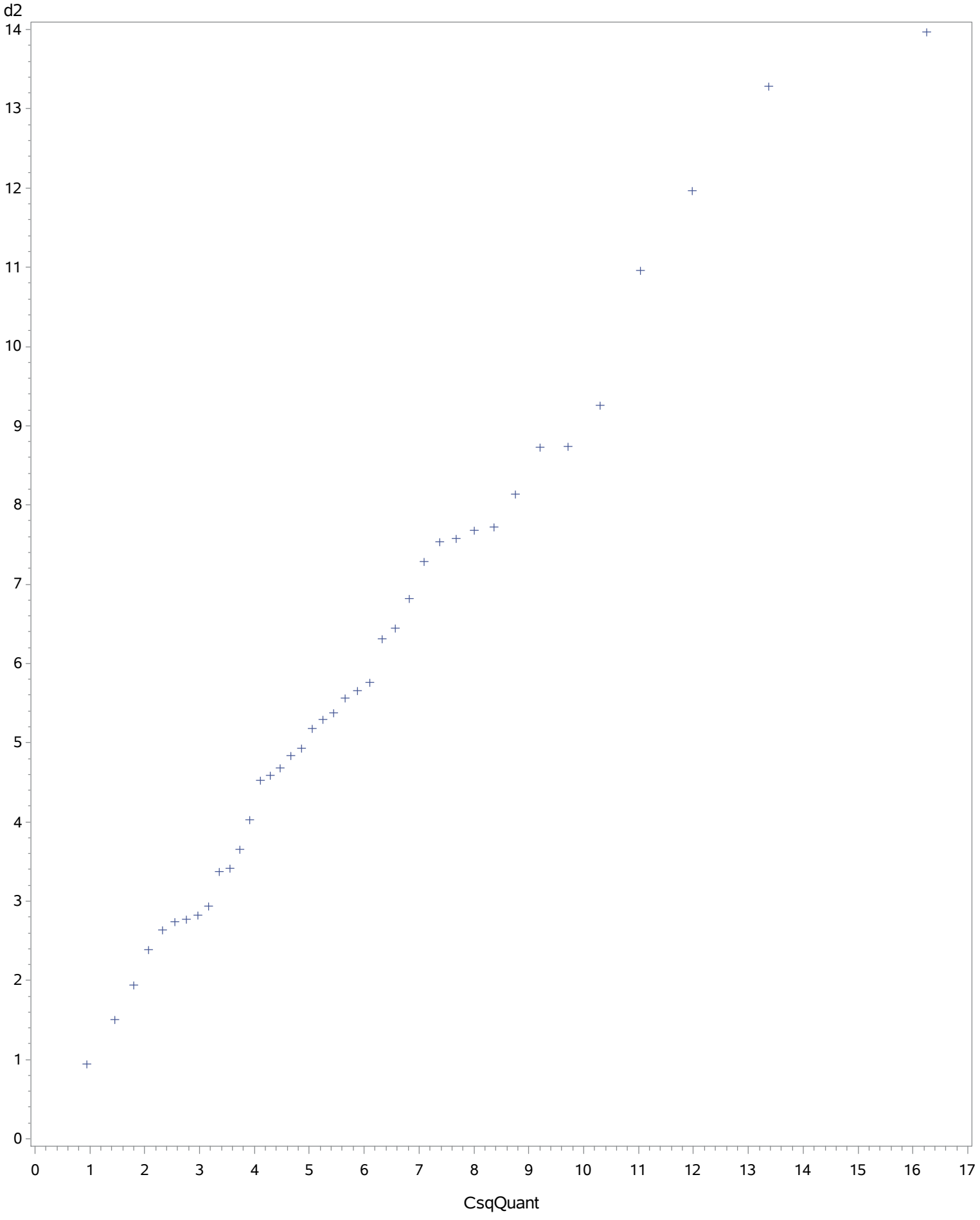
Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	8.375
Std Dev	Sigma	3.348842

Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.14457997	**Pr > D**	0.034
Cramer-von Mises	**W-Sq**	0.08399038	**Pr > W-Sq**	0.185
Anderson-Darling	**A-Sq**	0.50346808	**Pr > A-Sq**	0.202

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	3.00000	0.58443
5.0	3.00000	2.86664
10.0	4.50000	4.08329
25.0	6.00000	6.11624
50.0	8.00000	8.37500
75.0	10.50000	10.63376
90.0	13.00000	12.66671
95.0	15.00000	13.88336
99.0	16.00000	16.16557

The UNIVARIATE Procedure




d2
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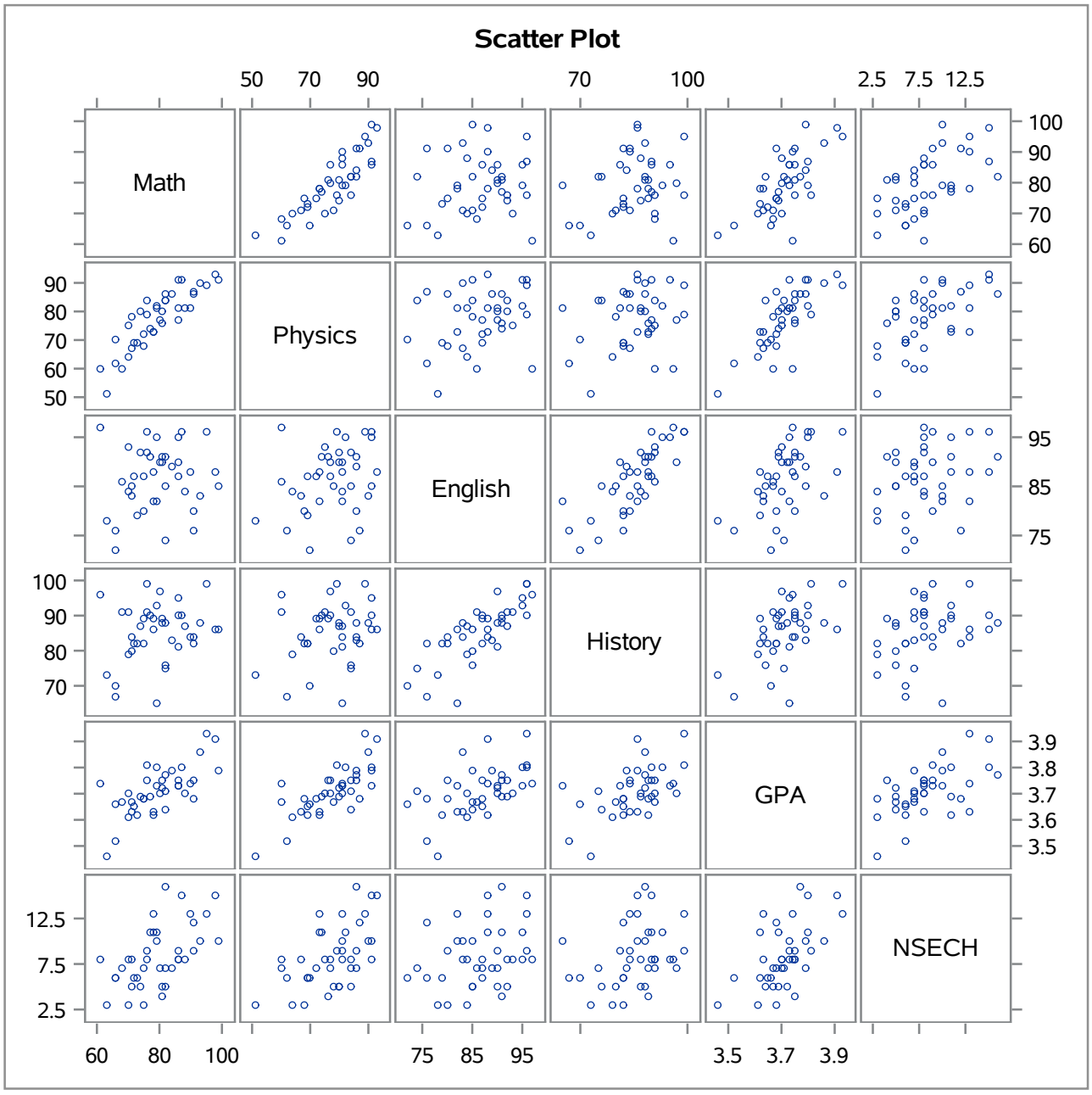
CsqQuant

The CORR Procedure

6 Variables:	Math	Physics	English	History	GPA	NSECH



The CORR Procedure

4 Variables:	Math Physics English History

Covariance Matrix, DF = 39				
	Math	Physics	English	History
Math	88.71794872	80.64102564	8.34615385	17.87179487
Physics	80.64102564	98.04871795	18.23974359	20.36666667
English	8.34615385	18.23974359	41.63525641	40.48589744
History	17.87179487	20.36666667	40.48589744	63.56666667

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Math	40	79.50000	9.41902	3180	61.00000	99.00000
Physics	40	77.55000	9.90196	3102	51.00000	93.00000
English	40	86.57500	6.45254	3463	72.00000	97.00000
History	40	85.35000	7.97287	3414	65.00000	99.00000

Pearson Correlation Coefficients, N = 40 Prob > |r| under H0: Rho=0				
	Math	Physics	English	History
Math	1.00000	0.86463 <.0001	0.13733 0.3981	0.23798 0.1392
Physics	0.86463 <.0001	1.00000	0.28547 0.0742	0.25798 0.1080
English	0.13733 0.3981	0.28547 0.0742	1.00000	0.78697 <.0001
History	0.23798 0.1392	0.25798 0.1080	0.78697 <.0001	1.00000

Pearson Correlation Statistics (Fisher's z Transformation)						
Variable	With Variable	N	Sample Correlation	Fisher's z	95% Confidence Limits	p Value for H0:Rho=0
Math	Physics	40	0.86463	1.31140	0.757012 0.926574	<.0001
Math	English	40	0.13733	0.13820	-0.181968 0.430422	0.4006
Math	History	40	0.23798	0.24264	-0.079413 0.511569	0.1400
Physics	English	40	0.28547	0.29363	-0.028576 0.548231	0.0741
Physics	History	40	0.25798	0.26394	-0.058208 0.527127	0.1084
English	History	40	0.78697	1.06342	0.629874 0.882208	<.0001

The CORR Procedure

4 Variables:	Math Physics English History

Covariance Matrix, DF = 39				
	Math	Physics	English	History
Math	88.71794872	80.64102564	8.34615385	17.87179487
Physics	80.64102564	98.04871795	18.23974359	20.36666667
English	8.34615385	18.23974359	41.63525641	40.48589744
History	17.87179487	20.36666667	40.48589744	63.56666667

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Math	40	79.50000	9.41902	3180	61.00000	99.00000
Physics	40	77.55000	9.90196	3102	51.00000	93.00000
English	40	86.57500	6.45254	3463	72.00000	97.00000
History	40	85.35000	7.97287	3414	65.00000	99.00000

Pearson Correlation Coefficients, N = 40 Prob > |r| under H0: Rho=0				
	Math	Physics	English	History
Math	1.00000	0.86463 <.0001	0.13733 0.3981	0.23798 0.1392
Physics	0.86463 <.0001	1.00000	0.28547 0.0742	0.25798 0.1080
English	0.13733 0.3981	0.28547 0.0742	1.00000	0.78697 <.0001
History	0.23798 0.1392	0.25798 0.1080	0.78697 <.0001	1.00000

Pearson Correlation Statistics (Fisher's z Transformation)							
Variable	With Variable	N	Sample Correlation	Fisher's z	99.17% Confidence Limits		p Value for H0:Rho=0
Math	Physics	40	0.86463	1.31140	0.705249	0.940818	<.0001
Math	English	40	0.13733	0.13820	-0.287216	0.516772	0.4006
Math	History	40	0.23798	0.24264	-0.188799	0.589150	0.1400
Physics	English	40	0.28547	0.29363	-0.139186	0.621447	0.0741
Physics	History	40	0.25798	0.26394	-0.168172	0.602886	0.1084
English	History	40	0.78697	1.06342	0.557843	0.904632	<.0001

The CORR Procedure

6 Variables:	Math Physics English History GPA NSECH

Covariance Matrix, DF = 39						
	Math	Physics	English	History	GPA	NSECH
Math	88.71794872	80.64102564	8.34615385	17.87179487	0.59358974	18.03846154
Physics	80.64102564	98.04871795	18.23974359	20.36666667	0.68351282	18.68589744
English	8.34615385	18.23974359	41.63525641	40.48589744	0.31116667	6.54807692
History	17.87179487	20.36666667	40.48589744	63.56666667	0.38869231	8.48076923
GPA	0.59358974	0.68351282	0.31116667	0.38869231	0.00816692	0.17173077
NSECH	18.03846154	18.68589744	6.54807692	8.48076923	0.17173077	11.21474359

varnames	xbar Math	mu0
Math	79.5	77.7
Physics	77.55	74.8
English	86.575	86.3
History	85.35	85.1
GPA	3.7115	3.62
NSECH	8.375	6.7

t2	f	fcrit	df1	df2	pval
107.29477	15.589838	2.3803127	6	34	1.6612E-8

varnames	LoI	UpI	LoB	UpB	LoT	UpT
Math	76.487651	82.512349	75.360451	83.639549	73.472167	85.527833
Physics	74.383201	80.716799	73.198206	81.901794	71.213106	83.886894
English	84.511378	88.638622	83.739185	89.410815	82.445608	90.704392
History	82.800152	87.899848	81.846017	88.853983	80.247651	90.452349
GPA	3.6825979	3.7404021	3.671783	3.751217	3.6536658	3.7693342
NSECH	7.3039883	9.4460117	6.903223	9.846777	6.2318619	10.518138

The MEANS Procedure

Vars=Engl

Analysis Variable : Ratio				
N	Mean	Std Dev	Minimum	Maximum
40	1.0031866	0.0747687	0.8342990	1.1239861

Vars=GPA

Analysis Variable : Ratio				
N	Mean	Std Dev	Minimum	Maximum
40	1.0252762	0.0249644	0.9558011	1.0856354

Vars=Hist

Analysis Variable : Ratio				
N	Mean	Std Dev	Minimum	Maximum
40	1.0029377	0.0936883	0.7638073	1.1633373

Vars=Math

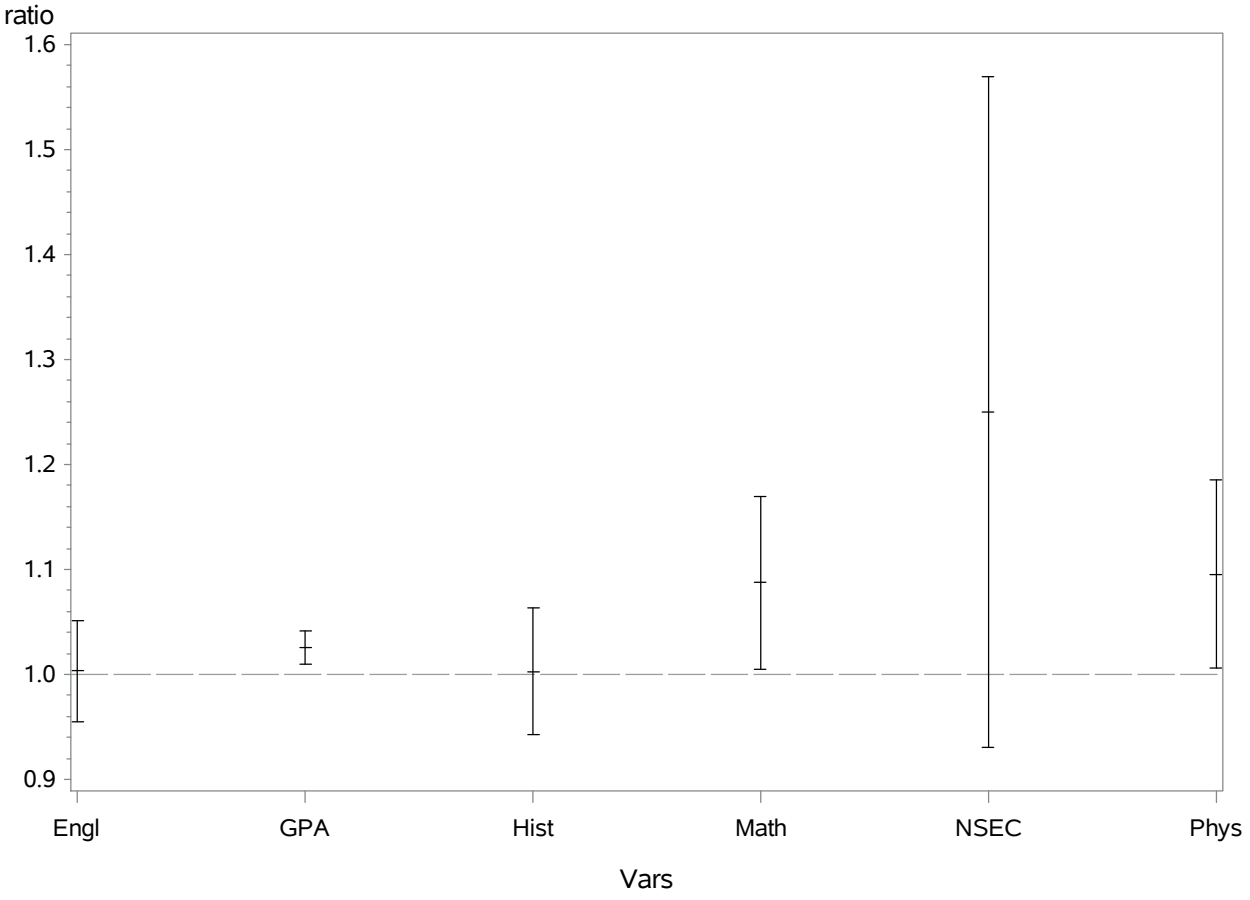
Analysis Variable : Ratio				
N	Mean	Std Dev	Minimum	Maximum
40	1.0875513	0.1288512	0.8344733	1.3543092

Vars=NSEC

Analysis Variable : Ratio				
N	Mean	Std Dev	Minimum	Maximum
40	1.2500000	0.4998272	0.4477612	2.3880597

Vars=Phys

Analysis Variable : Ratio				
N	Mean	Std Dev	Minimum	Maximum
40	1.0953390	0.1398581	0.7203390	1.3135593


ratio
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1.5
1.4
1.3
1.2
1.1
1.0
0.9
Engl
GPA
Hist
Math
NSEC
Phys
Vars

The CORR Procedure

AdvM=No

4 Variables:	Math Physics English History

Covariance Matrix, DF = 19				
	Math	**Physics**	**English**	**History**
Math	47.71315789	51.69736842	2.15000000	3.38947368
Physics	51.69736842	86.51315789	12.19736842	6.36842105
English	2.15000000	12.19736842	50.57631579	57.77894737
History	3.38947368	6.36842105	57.77894737	91.74736842

The CORR Procedure

AdvM=Yes

4 Variables:	Math Physics English History

Covariance Matrix, DF = 19				
	Math	**Physics**	**English**	**History**
Math	62.34473684	54.71315789	2.35789474	6.81578947
Physics	54.71315789	66.23947368	14.88421053	13.71052632
English	2.35789474	14.88421053	32.67368421	20.68421053
History	6.81578947	13.71052632	20.68421053	29.00000000

varnames	xbar1 Math	xbar2
Math	73.65	85.35
Physics	72.75	82.35
English	85.55	87.6
History	83.2	87.5

	S1 Col1	Col2	Col3	Col4	S2 Col5	Col6	Col7	Col8
ROW1	47.713158	51.697368	2.15	3.3894737	62.344737	54.713158	2.3578947	6.8157895
ROW2	51.697368	86.513158	12.197368	6.3684211	54.713158	66.239474	14.884211	13.710526
ROW3	2.15	12.197368	50.576316	57.778947	2.3578947	14.884211	32.673684	20.684211
ROW4	3.3894737	6.3684211	57.778947	91.747368	6.8157895	13.710526	20.684211	29

Sp			
55.028947	53.205263	2.2539474	5.1026316
53.205263	76.376316	13.540789	10.039474
2.2539474	13.540789	41.625	39.231579
5.1026316	10.039474	39.231579	60.373684

t2	fstat	df1	df2	pval
28.224229	6.4990001	4	35	0.0005078

varnames	LoI	UpI	LoB	UpB	LoT	UpT
Math	-16.44887	-6.951126	-17.85122	-5.54878	-19.64522	-3.754782
Physics	-15.19467	-4.005331	-16.84678	-2.353221	-18.9603	-0.239704
English	-6.180211	2.0802106	-7.399865	3.2998648	-8.960148	4.8601479
History	-9.27415	0.6741504	-10.74302	2.1430206	-12.62212	4.0221216

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
AdvM	2	No Yes

Number of Observations Read	40
Number of Observations Used	40

The GLM Procedure

Dependent Variable: Math

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1368.900000	1368.900000	24.88	<.0001
Error	38	2091.100000	55.028947		
Corrected Total	39	3460.000000			

R-Square	Coeff Var	Root MSE	Math Mean
0.395636	9.331006	7.418150	79.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AdvM	1	1368.900000	1368.900000	24.88	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AdvM	1	1368.900000	1368.900000	24.88	<.0001

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
Difference	1	1368.900000	1368.900000	24.88	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Difference	-11.7000000	2.34582496	-4.99	<.0001

The GLM Procedure

Dependent Variable: Physics

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	921.600000	921.600000	12.07	0.0013
Error	38	2902.300000	76.376316		
Corrected Total	39	3823.900000			

R-Square	Coeff Var	Root MSE	Physics Mean
0.241010	11.26932	8.739354	77.55000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AdvM	1	921.6000000	921.6000000	12.07	0.0013

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AdvM	1	921.6000000	921.6000000	12.07	0.0013

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
Difference	1	921.6000000	921.6000000	12.07	0.0013

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Difference	-9.60000000	2.76362653	-3.47	0.0013

The GLM Procedure

Dependent Variable: English

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	42.025000	42.025000	1.01	0.3214
Error	38	1581.750000	41.625000		
Corrected Total	39	1623.775000			

R-Square	Coeff Var	Root MSE	English Mean
0.025881	7.452202	6.451744	86.57500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AdvM	1	42.02500000	42.02500000	1.01	0.3214

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AdvM	1	42.02500000	42.02500000	1.01	0.3214

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
Difference	1	42.02500000	42.02500000	1.01	0.3214

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Difference	-2.05000000	2.04022058	-1.00	0.3214

The GLM Procedure

Dependent Variable: History

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	184.900000	184.900000	3.06	0.0882
Error	38	2294.200000	60.373684		
Corrected Total	39	2479.100000			

R-Square	Coeff Var	Root MSE	History Mean
0.074584	9.103750	7.770050	85.35000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AdvM	1	184.9000000	184.9000000	3.06	0.0882

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AdvM	1	184.9000000	184.9000000	3.06	0.0882

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
Difference	1	184.9000000	184.9000000	3.06	0.0882

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Difference	-4.30000000	2.45710570	-1.75	0.0882

The GLM Procedure
Multivariate Analysis of Variance

E = Error SSCP Matrix				
	Math	**Physics**	**English**	**History**
Math	2091.1	2021.8	85.65	193.9
Physics	2021.8	2902.3	514.55	381.5
English	85.65	514.55	1581.75	1490.8
History	193.9	381.5	1490.8	2294.2

Partial Correlation Coefficients from the Error SSCP Matrix / Prob > |r|				
DF = 38	**Math**	**Physics**	**English**	**History**
Math	1.000000	0.820691 <.0001	0.047095 0.7759	0.088527 0.5920
Physics	0.820691 <.0001	1.000000	0.240153 0.1409	0.147845 0.3691
English	0.047095 0.7759	0.240153 0.1409	1.000000	0.782591 <.0001
History	0.088527 0.5920	0.147845 0.3691	0.782591 <.0001	1.000000

The GLM Procedure
Multivariate Analysis of Variance

H = Type III SSCP Matrix for AdvM				
	Math	Physics	English	History
Math	1368.9	1123.2	239.85	503.1
Physics	1123.2	921.6	196.8	412.8
English	239.85	196.8	42.025	88.15
History	503.1	412.8	88.15	184.9

Characteristic Roots and Vectors of: E Inverse * H, where
H = Type III SSCP Matrix for AdvM
E = Error SSCP Matrix

Characteristic Root	Percent	Characteristic Vector V'EV=1			
		Math	Physics	English	History
0.74274286	100.00	0.02786274	-0.00812904	0.00091540	0.00527934
0.00000000	0.00	-0.01475944	0.01021609	-0.03560975	0.03432812
0.00000000	0.00	-0.02591855	0.03141917	0.00079171	0.00000000
0.00000000	0.00	0.00465239	-0.01125210	0.02614008	0.00000000

MANOVA Test Criteria and Exact F Statistics for the Hypothesis of No Overall AdvM Effect
H = Type III SSCP Matrix for AdvM
E = Error SSCP Matrix

S=1 M=1 N=16.5

Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda	0.57380812	6.50	4	35	0.0005
Pillai's Trace	0.42619188	6.50	4	35	0.0005
Hotelling-Lawley Trace	0.74274286	6.50	4	35	0.0005
Roy's Greatest Root	0.74274286	6.50	4	35	0.0005

H = Contrast SSCP Matrix for Difference				
	Math	Physics	English	History
Math	1368.9	1123.2	239.85	503.1
Physics	1123.2	921.6	196.8	412.8
English	239.85	196.8	42.025	88.15
History	503.1	412.8	88.15	184.9

The GLM Procedure
Multivariate Analysis of Variance

Characteristic Roots and Vectors of: E Inverse * H, where H = Contrast SSCP Matrix for Difference E = Error SSCP Matrix					
Characteristic Root	Percent	Characteristic Vector V'EV=1			
		Math	Physics	English	History
0.74274286	100.00	0.02786274	-0.00812904	0.00091540	0.00527934
0.00000000	0.00	-0.01475944	0.01021609	-0.03560975	0.03432812
0.00000000	0.00	-0.02591855	0.03141917	0.00079171	0.00000000
0.00000000	0.00	0.00465239	-0.01125210	0.02614008	0.00000000

MANOVA Test Criteria and Exact F Statistics for the Hypothesis of No Overall Difference Effect H = Contrast SSCP Matrix for Difference E = Error SSCP Matrix S=1 M=1 N=16.5					
Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda	0.57380812	6.50	4	35	0.0005
Pillai's Trace	0.42619188	6.50	4	35	0.0005
Hotelling-Lawley Trace	0.74274286	6.50	4	35	0.0005
Roy's Greatest Root	0.74274286	6.50	4	35	0.0005

The CORR Procedure

AdvM=No

4 Variables:	rMath rPhysics rEnglish rHistory

Covariance Matrix, DF = 19				
	rMath	**rPhysics**	**rEnglish**	**rHistory**
rMath	47.71315789	51.69736842	2.15000000	3.38947368
rPhysics	51.69736842	86.51315789	12.19736842	6.36842105
rEnglish	2.15000000	12.19736842	50.57631579	57.77894737
rHistory	3.38947368	6.36842105	57.77894737	91.74736842

The CORR Procedure

AdvM=Yes

4 Variables:	rMath rPhysics rEnglish rHistory

Covariance Matrix, DF = 19				
	rMath	**rPhysics**	**rEnglish**	**rHistory**
rMath	62.34473684	54.71315789	2.35789474	6.81578947
rPhysics	54.71315789	66.23947368	14.88421053	13.71052632
rEnglish	2.35789474	14.88421053	32.67368421	20.68421053
rHistory	6.81578947	13.71052632	20.68421053	29.00000000

The DISCRIM Procedure

Total Sample Size	40	**DF Total**	39
Variables	4	**DF Within Classes**	38
Classes	2	**DF Between Classes**	1

Number of Observations Read	40
Number of Observations Used	40

Class Level Information

AdvM	Variable Name	Frequency	Weight	Proportion	Prior Probability
No	No	20	20.0000	0.500000	0.500000
Yes	Yes	20	20.0000	0.500000	0.500000

Within Covariance Matrix Information

AdvM	Covariance Matrix Rank	Natural Log of the Determinant of the Covariance Matrix
No	4	14.28119
Yes	4	12.93266
Pooled	4	13.90007

The DISCRIM Procedure
Test of Homogeneity of Within Covariance Matrices

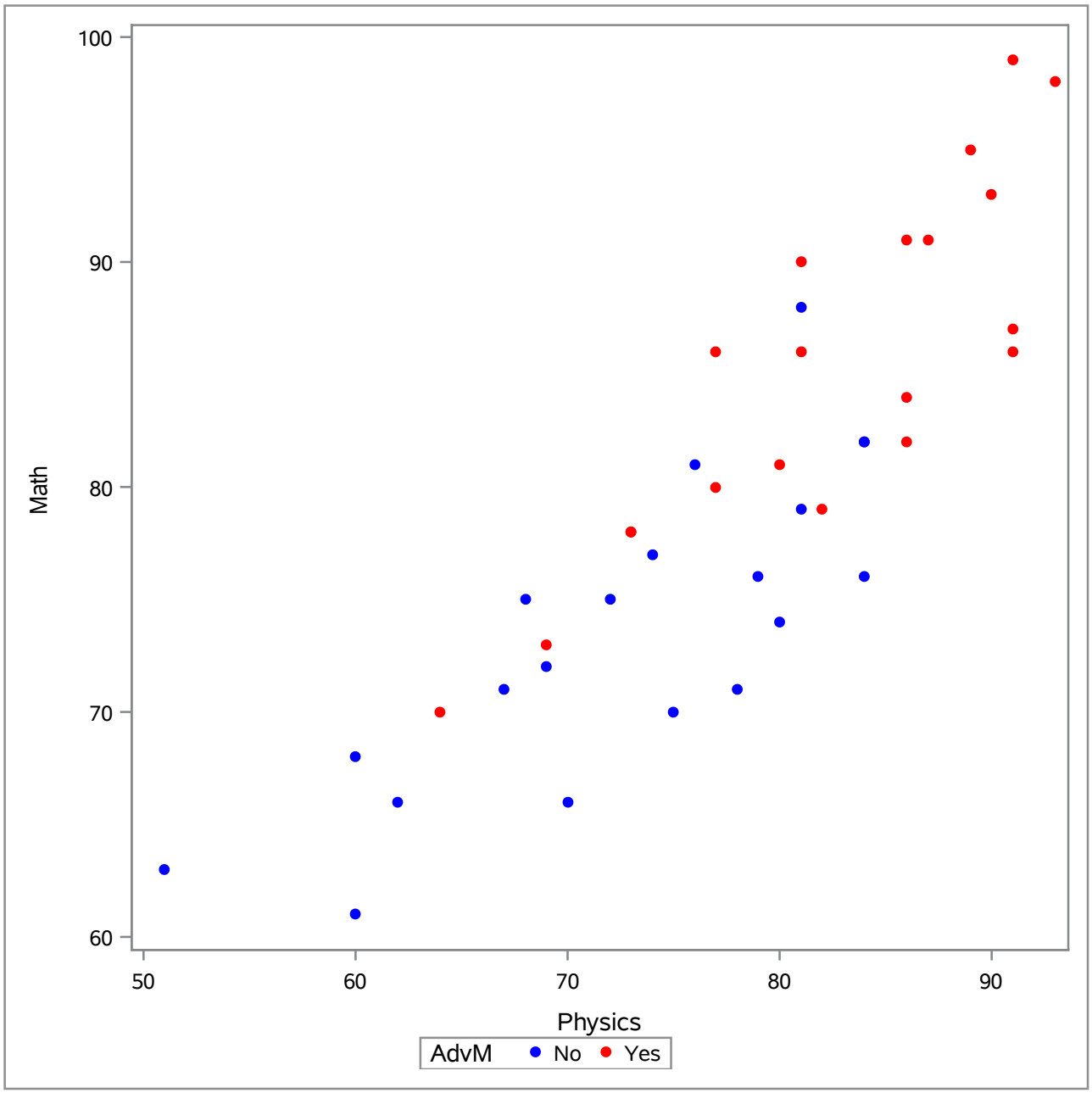
Chi-Square	DF	Pr > ChiSq
9.878987	10	0.4512

Since the Chi-Square value is not significant at the 0.1 level, a pooled covariance matrix will be used in the discriminant function.
Reference: Morrison, D.F. (1976) Multivariate Statistical Methods p252.

The DISCRIM Procedure

Generalized Squared Distance to AdvM		
From AdvM	No	Yes
No	0	2.82242
Yes	2.82242	0

Linear Discriminant Function for AdvM		
Variable	No	Yes
Constant	-142.40965	-164.30820
Math	2.26747	2.55602
Physics	-1.04034	-1.12453
English	2.55354	2.56302
History	-0.29988	-0.24521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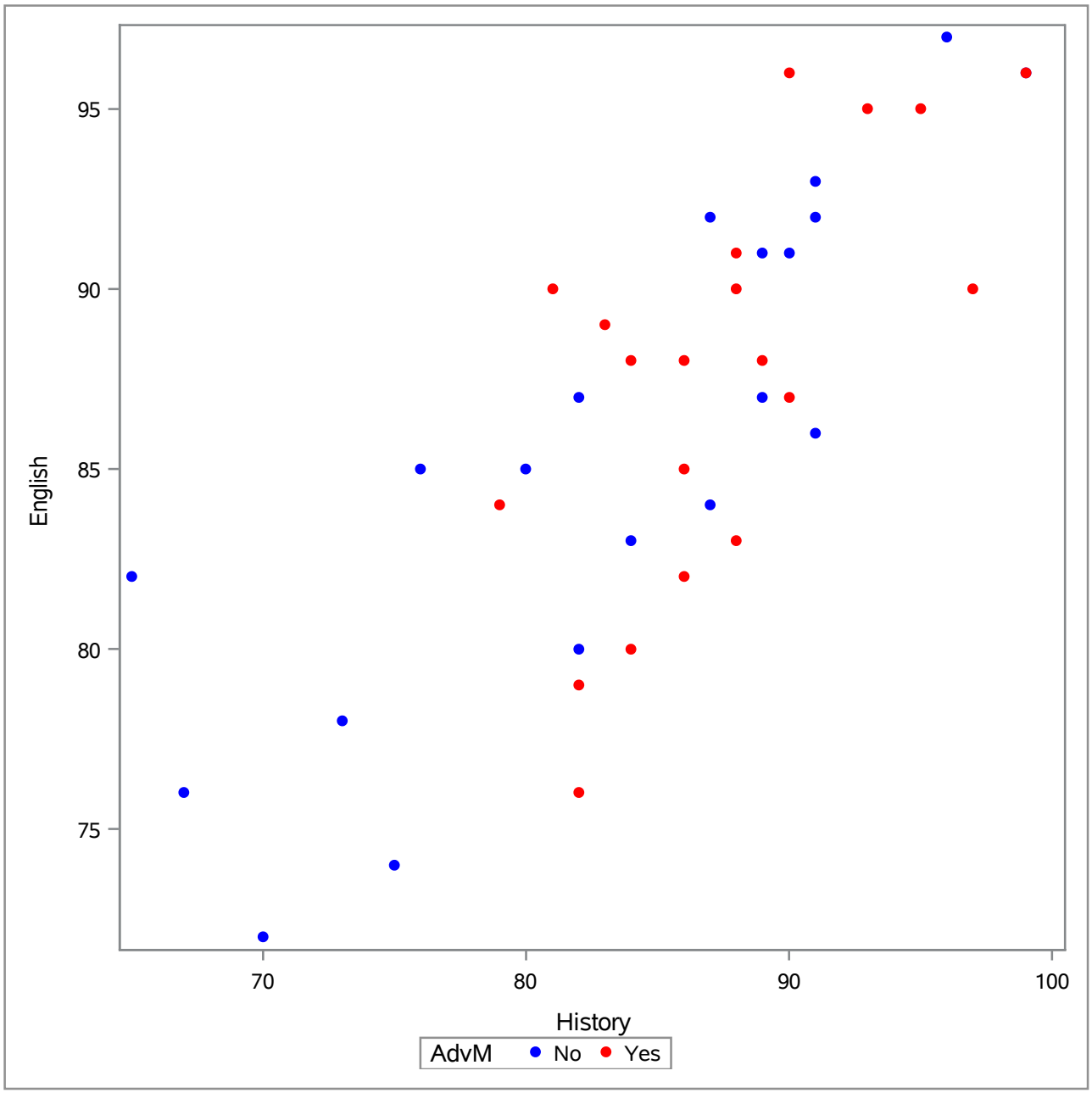
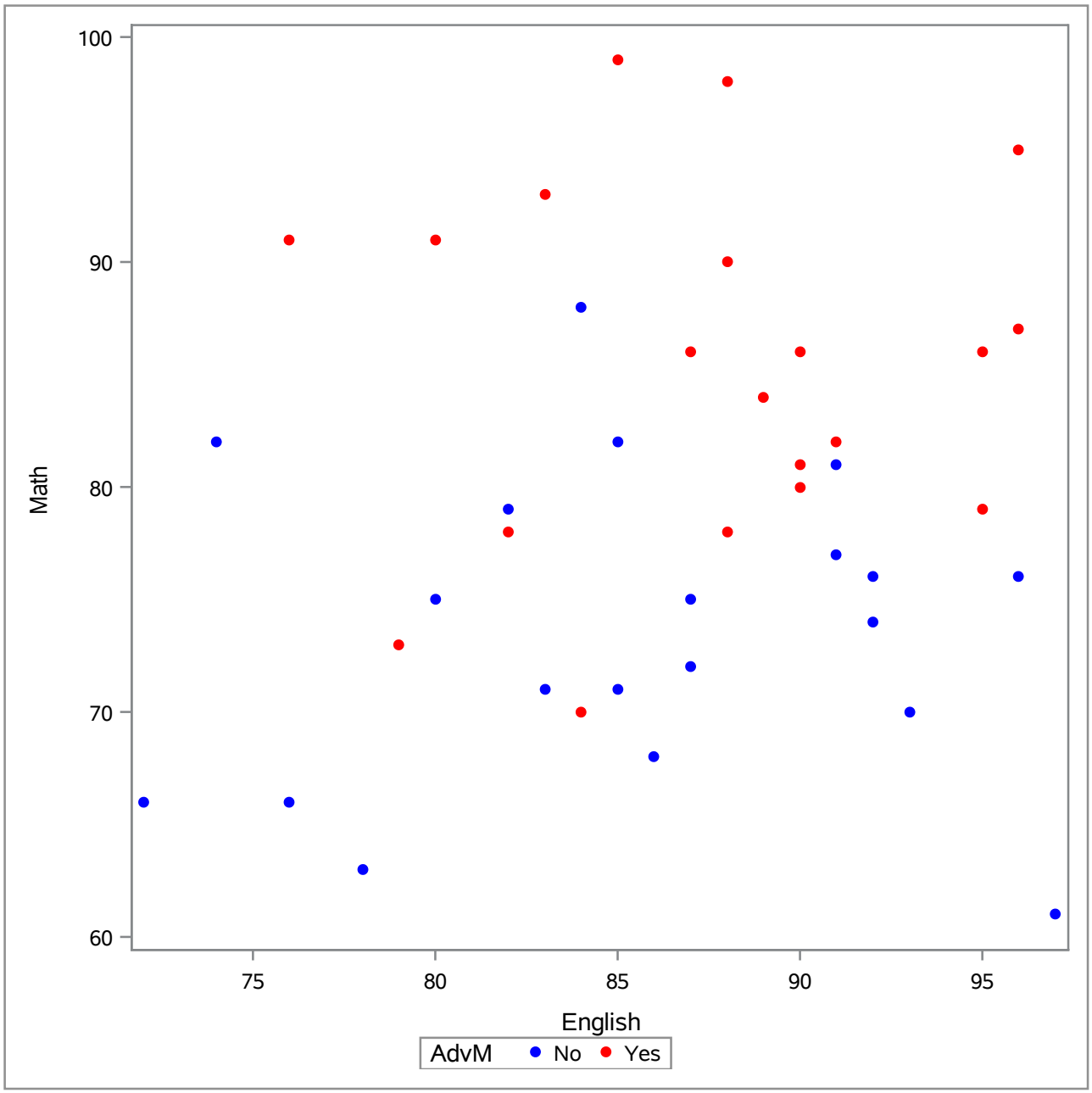
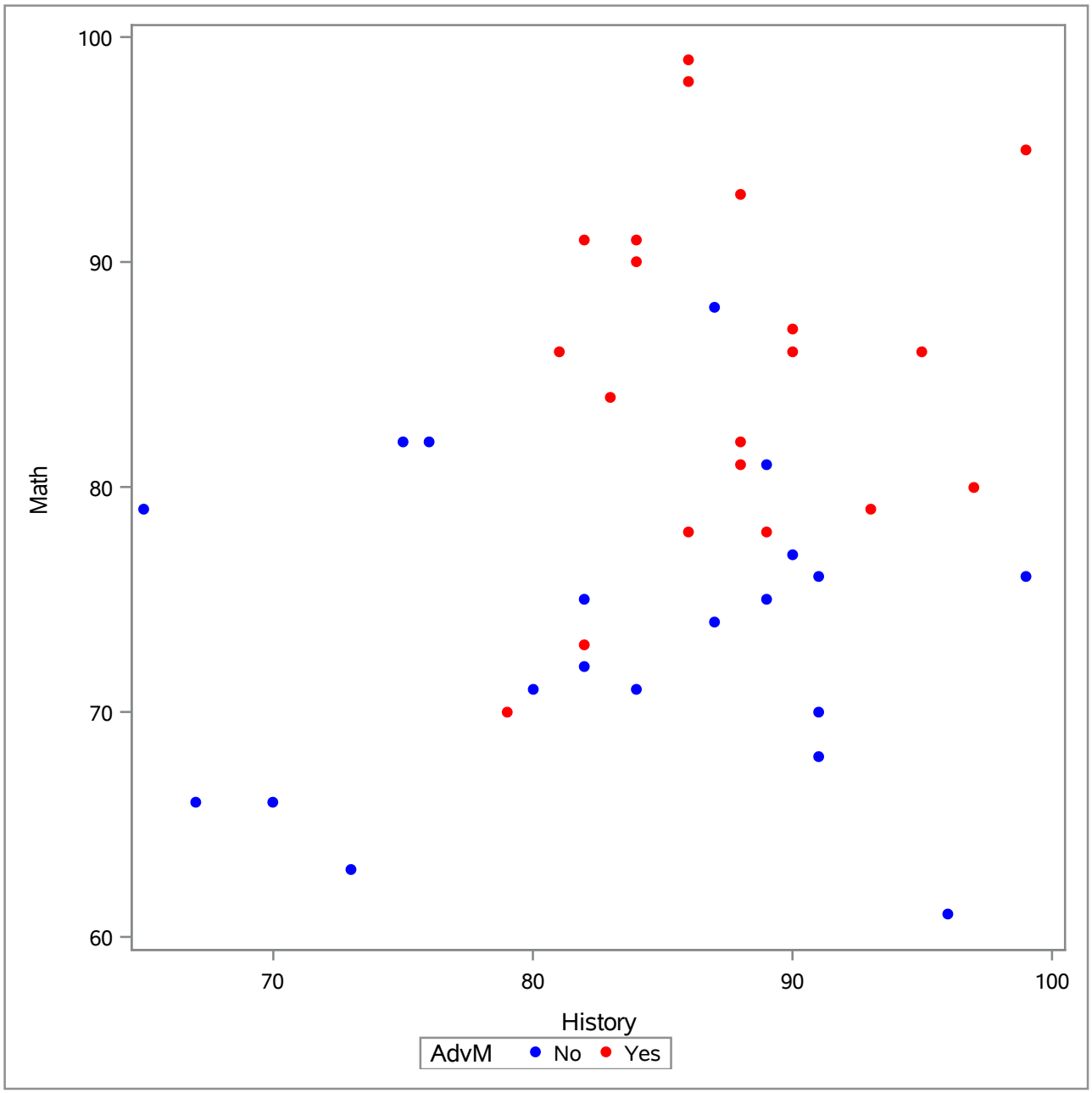
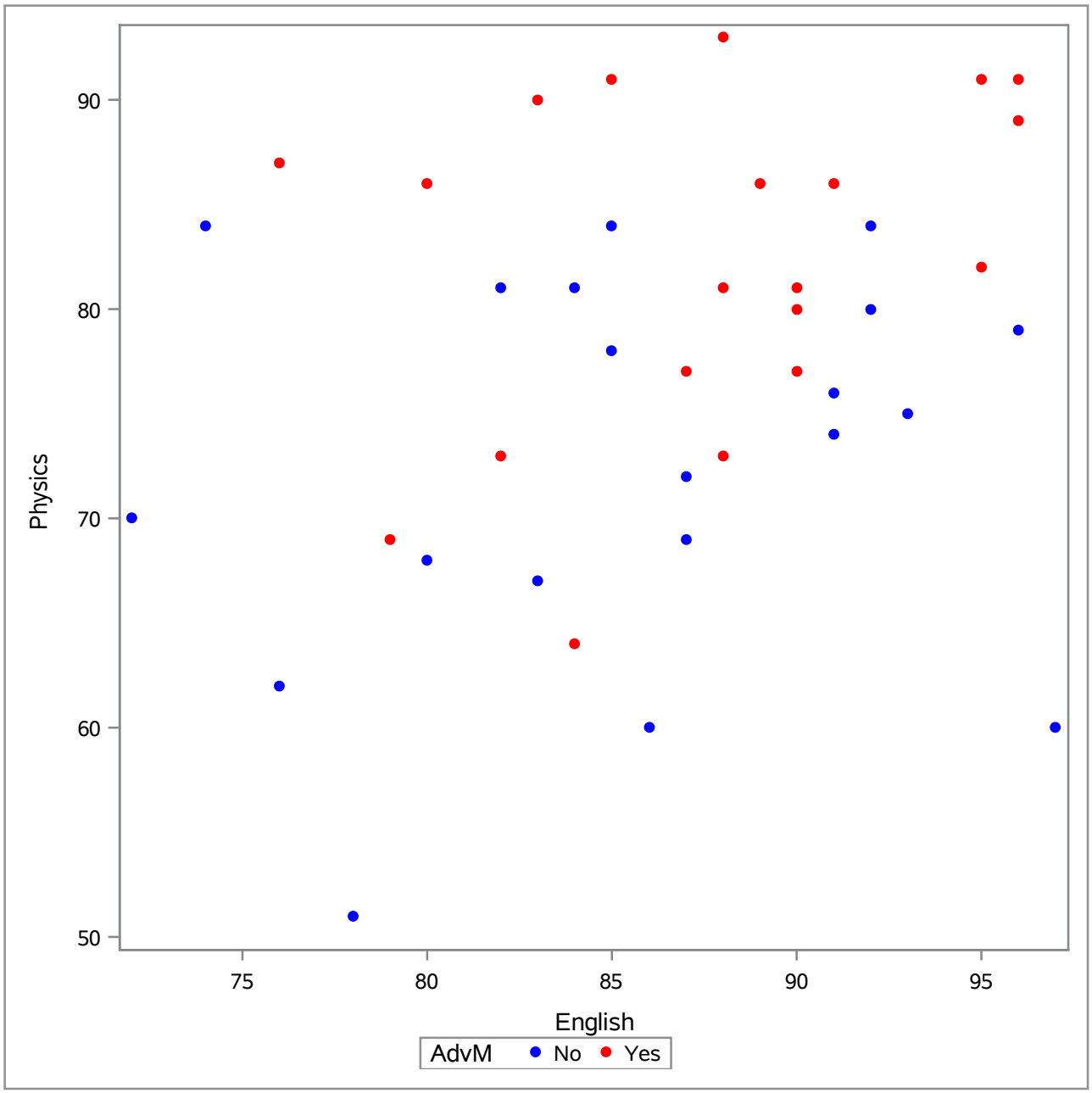
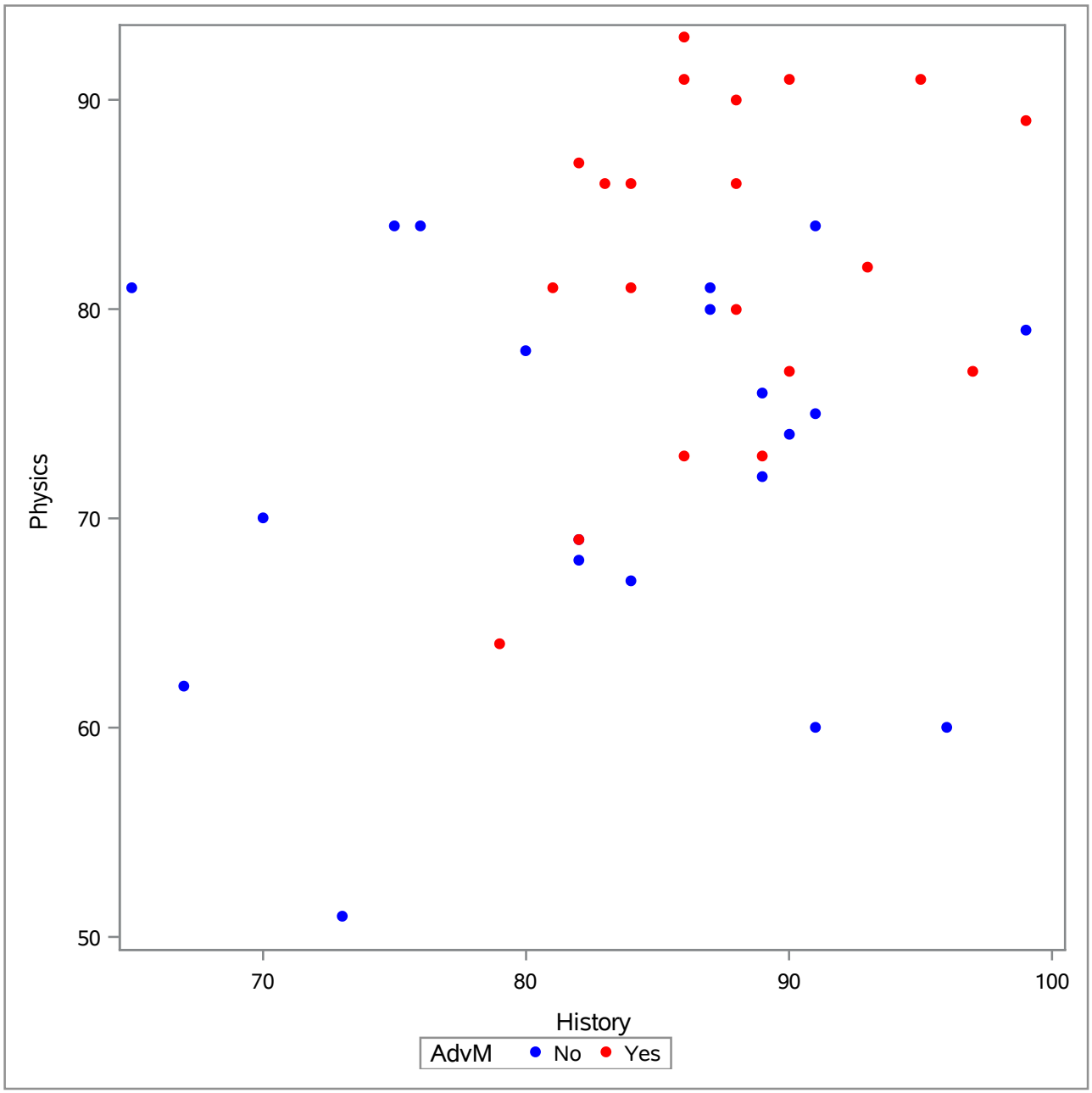
90
80
70
60
Math
50
60
70
80
90
Physics
AdvM
No
Yes

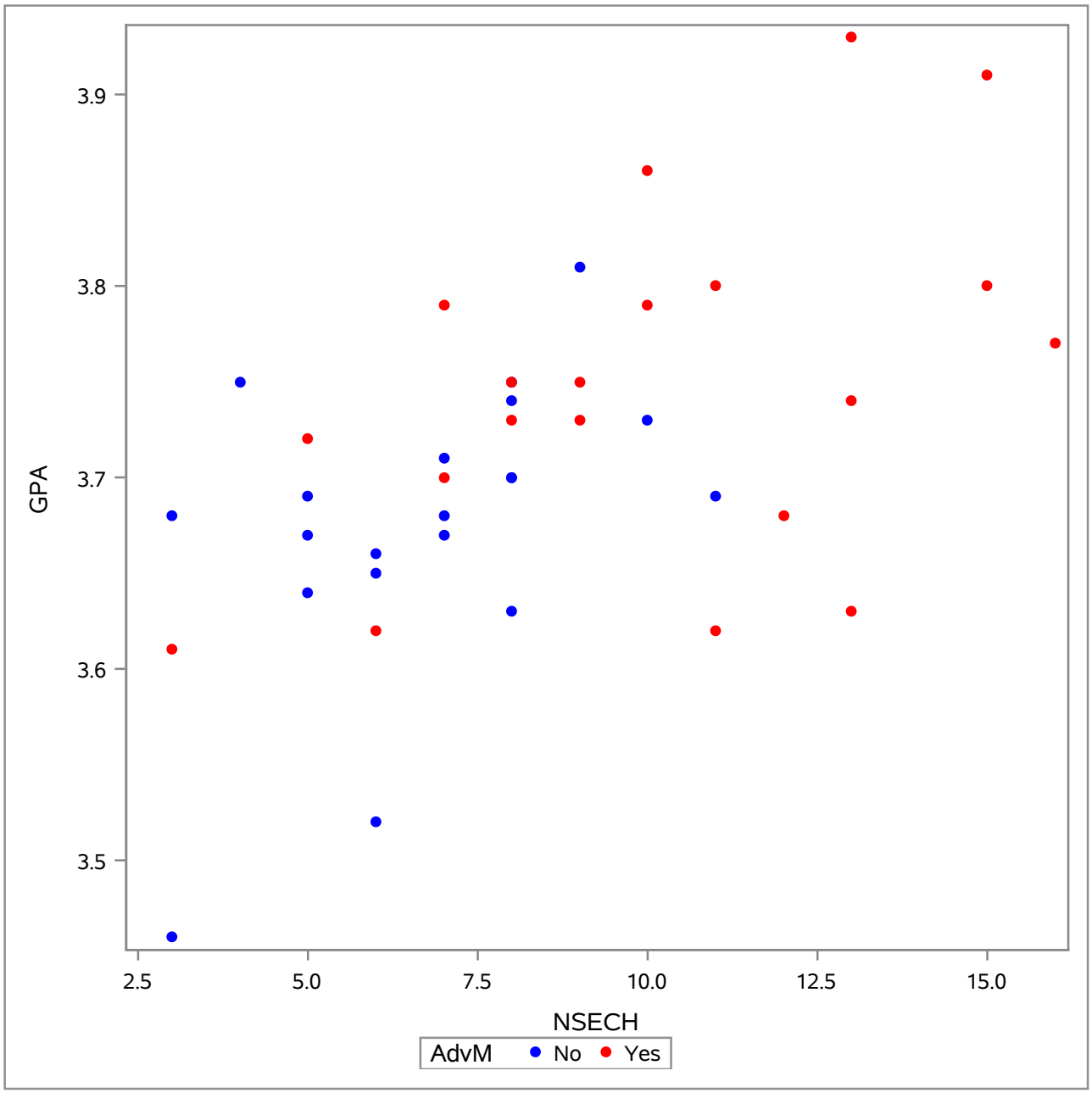

95
90
85
80
75
English
70
80
90
100
History
AdvM
No
Yes


100
90
80
70
60
Math
75
80
85
90
95
English
AdvM
No
Yes


100
90
80
70
60
Math
70
80
90
100
History
AdvM
No
Yes


Physics
90
80
70
60
50
75
80
85
90
95
English
AdvM
No
Yes


90
80
70
60
50
Physics
70
80
90
100
History
AdvM
No
Yes


3.9
3.8
3.7
3.6
3.5
GPA
2.5
5.0
7.5
10.0
12.5
15.0
NSECH
AdvM
No
Yes

The DISCRIM Procedure

Total Sample Size	40	**DF Total**	39
Variables	6	**DF Within Classes**	38
Classes	2	**DF Between Classes**	1

Number of Observations Read	40
Number of Observations Used	40

Class Level Information

AdvM	Variable Name	Frequency	Weight	Proportion	Prior Probability
No	No	20	20.0000	0.500000	0.500000
Yes	Yes	20	20.0000	0.500000	0.500000

Within Covariance Matrix Information

AdvM	Covariance Matrix Rank	Natural Log of the Determinant of the Covariance Matrix
No	6	9.19622
Yes	6	8.83806
Pooled	6	9.66555

The DISCRIM Procedure
Test of Homogeneity of Within Covariance Matrices

Chi-Square	DF	Pr > ChiSq
20.517475	21	0.4887

Since the Chi-Square value is not significant at the 0.1 level, a pooled covariance matrix will be used in the discriminant function.
Reference: Morrison, D.F. (1976) Multivariate Statistical Methods p252.

The DISCRIM Procedure

Generalized Squared Distance to AdvM		
From AdvM	No	Yes
No	1.38629	4.85433
Yes	4.85433	1.38629

Linear Discriminant Function for AdvM		
Variable	No	Yes
Constant	-1899	-1887
Math	-1.19676	-0.89340
Physics	-5.55718	-5.61701
English	-0.92258	-0.89944
History	-3.26909	-3.19034
GPA	1273	1261
NSECH	-5.73978	-5.47044

The DISCRIM Procedure
Classification Summary for Calibration Data: WORK.STUDENTDATA
Resubstitution Summary using Linear Discriminant Function

Number of Observations and Percent Classified into AdvM			
From AdvM	No	Yes	Total
No	18 90.00	2 10.00	20 100.00
Yes	4 20.00	16 80.00	20 100.00
Total	22 55.00	18 45.00	40 100.00
Priors	0.5	0.5	

Error Count Estimates for AdvM			
	No	Yes	Total
Rate	0.1000	0.2000	0.1500
Priors	0.5000	0.5000	

The DISCRIM Procedure
Classification Summary for Calibration Data: WORK.STUDENTDATA
Cross-validation Summary using Linear Discriminant Function

Number of Observations and Percent Classified into AdvM			
From AdvM	No	Yes	Total
No	17 85.00	3 15.00	20 100.00
Yes	5 25.00	15 75.00	20 100.00
Total	22 55.00	18 45.00	40 100.00
Priors	0.5	0.5	

Error Count Estimates for AdvM			
	No	Yes	Total
Rate	0.1500	0.2500	0.2000
Priors	0.5000	0.5000	

The DISCRIM Procedure
Classification Summary for Test Data: WORK.SDTEST
Classification Summary using Linear Discriminant Function

Observation Profile for Test Data	
Number of Observations Read	5
Number of Observations Used	5

Number of Observations and Percent Classified into AdvM			
	No	Yes	Total
Total	1 20.00	4 80.00	5 100.00
Priors	0.5	0.5	

Obs	Math	Physics	English	History	GPA	NSECH	No	Yes	_INTO_
1	96	94	90	91	3.83	12	0.01513	0.98487	Yes
2	82	77	89	88	3.69	6	0.34058	0.65942	Yes
3	74	73	93	87	3.65	5	0.79050	0.20950	No
4	94	90	80	75	3.70	7	0.07965	0.92035	Yes
5	85	77	97	90	3.68	8	0.07138	0.92862	Yes

The DISCRIM Procedure

Total Sample Size	40	**DF Total**	39
Variables	4	**DF Within Classes**	38
Classes	2	**DF Between Classes**	1

Number of Observations Read	40
Number of Observations Used	40

Class Level Information

AdvM	Variable Name	Frequency	Weight	Proportion	Prior Probability
No	No	20	20.0000	0.500000	0.500000
Yes	Yes	20	20.0000	0.500000	0.500000

Within Covariance Matrix Information

AdvM	Covariance Matrix Rank	Natural Log of the Determinant of the Covariance Matrix
No	4	14.28119
Yes	4	12.93266
Pooled	4	13.90007

The DISCRIM Procedure
Test of Homogeneity of Within Covariance Matrices

Chi-Square	DF	Pr > ChiSq
9.878987	10	0.4512

Since the Chi-Square value is not significant at the 0.1 level, a pooled covariance matrix will be used in the discriminant function.
Reference: Morrison, D.F. (1976) Multivariate Statistical Methods p252.

The DISCRIM Procedure

Generalized Squared Distance to AdvM		
From AdvM	No	Yes
No	1.38629	4.20872
Yes	4.20872	1.38629

Linear Discriminant Function for AdvM		
Variable	No	Yes
Constant	-143.10279	-165.00135
Math	2.26747	2.55602
Physics	-1.04034	-1.12453
English	2.55354	2.56302
History	-0.29988	-0.24521

The DISCRIM Procedure
Classification Summary for Calibration Data: WORK.STUDENTDATA
Resubstitution Summary using Linear Discriminant Function

Number of Observations and Percent Classified into AdvM			
From AdvM	No	Yes	Total
No	18 90.00	2 10.00	20 100.00
Yes	4 20.00	16 80.00	20 100.00
Total	22 55.00	18 45.00	40 100.00
Priors	0.5	0.5	

Error Count Estimates for AdvM			
	No	Yes	Total
Rate	0.1000	0.2000	0.1500
Priors	0.5000	0.5000	

The DISCRIM Procedure
Classification Summary for Calibration Data: WORK.STUDENTDATA
Cross-validation Summary using Linear Discriminant Function

Number of Observations and Percent Classified into AdvM			
From AdvM	No	Yes	Total
No	16 80.00	4 20.00	20 100.00
Yes	4 20.00	16 80.00	20 100.00
Total	20 50.00	20 50.00	40 100.00
Priors	0.5	0.5	

Error Count Estimates for AdvM			
	No	Yes	Total
Rate	0.2000	0.2000	0.2000
Priors	0.5000	0.5000	

The DISCRIM Procedure
Classification Summary for Test Data: WORK.SDTEST
Classification Summary using Linear Discriminant Function

Observation Profile for Test Data	
Number of Observations Read	5
Number of Observations Used	5

Number of Observations and Percent Classified into AdvM			
	No	Yes	Total
Total	1 20.00	4 80.00	5 100.00
Priors	0.5	0.5	

Obs	Math	Physics	English	History	GPA	NSECH	No	Yes	_INTO_
1	96	94	90	91	3.83	12	0.02371	0.97629	Yes
2	82	77	89	88	3.69	6	0.28180	0.71820	Yes
3	74	73	93	87	3.65	5	0.74133	0.25867	No
4	94	90	80	75	3.70	7	0.07532	0.92468	Yes
5	85	77	97	90	3.68	8	0.12064	0.87936	Yes

The DISCRIM Procedure

Total Sample Size	40	**DF Total**	39
Variables	2	**DF Within Classes**	38
Classes	2	**DF Between Classes**	1

Number of Observations Read	40
Number of Observations Used	40

Class Level Information

AdvM	Variable Name	Frequency	Weight	Proportion	Prior Probability
No	No	20	20.0000	0.500000	0.500000
Yes	Yes	20	20.0000	0.500000	0.500000

Within Covariance Matrix Information

AdvM	Covariance Matrix Rank	Natural Log of the Determinant of the Covariance Matrix
No	2	7.28290
Yes	2	7.03540
Pooled	2	7.22410

The DISCRIM Procedure
Test of Homogeneity of Within Covariance Matrices

Chi-Square	DF	Pr > ChiSq
2.327499	3	0.5073

Since the Chi-Square value is not significant at the 0.1 level, a pooled covariance matrix will be used in the discriminant function.
Reference: Morrison, D.F. (1976) Multivariate Statistical Methods p252.

The DISCRIM Procedure

Generalized Squared Distance to AdvM		
From AdvM	No	Yes
No	1.38629	3.99148
Yes	3.99148	1.38629

Linear Discriminant Function for AdvM		
Variable	No	Yes
Constant	-50.02684	-66.88274
Math	1.27864	1.55765
Physics	0.06179	-0.00688

The DISCRIM Procedure
Classification Summary for Calibration Data: WORK.STUDENTDATA
Resubstitution Summary using Linear Discriminant Function

Number of Observations and Percent Classified into AdvM			
From AdvM	No	Yes	Total
No	16 80.00	4 20.00	20 100.00
Yes	5 25.00	15 75.00	20 100.00
Total	21 52.50	19 47.50	40 100.00
Priors	0.5	0.5	

Error Count Estimates for AdvM			
	No	Yes	Total
Rate	0.2000	0.2500	0.2250
Priors	0.5000	0.5000	

The DISCRIM Procedure
Classification Summary for Calibration Data: WORK.STUDENTDATA
Cross-validation Summary using Linear Discriminant Function

Number of Observations and Percent Classified into AdvM			
From AdvM	No	Yes	Total
No	16 80.00	4 20.00	20 100.00
Yes	6 30.00	14 70.00	20 100.00
Total	22 55.00	18 45.00	40 100.00
Priors	0.5	0.5	

Error Count Estimates for AdvM			
	No	Yes	Total
Rate	0.2000	0.3000	0.2500
Priors	0.5000	0.5000	

The DISCRIM Procedure
Classification Summary for Test Data: WORK.SDTEST
Classification Summary using Linear Discriminant Function

Observation Profile for Test Data	
Number of Observations Read	5
Number of Observations Used	5

Number of Observations and Percent Classified into AdvM			
	No	Yes	Total
Total	1 20.00	4 80.00	5 100.00
Priors	0.5	0.5	

Obs	Math	Physics	English	History	GPA	NSECH	No	Yes	_INTO_
1	96	94	90	91	3.83	12	0.03006	0.96994	Yes
2	82	77	89	88	3.69	6	0.32403	0.67597	Yes
3	74	73	93	87	3.65	5	0.77243	0.22757	No
4	94	90	80	75	3.70	7	0.03952	0.96048	Yes
5	85	77	97	90	3.68	8	0.17189	0.82811	Yes

The CLUSTER Procedure
Ward's Minimum Variance Cluster Analysis

Eigenvalues of the Covariance Matrix				
	Eigenvalue	Difference	Proportion	Cumulative
1	190.510610	107.590254	0.6284	0.6284
2	82.920357	66.855713	0.2735	0.9018
3	16.064644	8.644075	0.0530	0.9548
4	7.420568	1.147431	0.0245	0.9793
5	6.273137	6.270953	0.0207	1.0000
6	0.002184		0.0000	1.0000

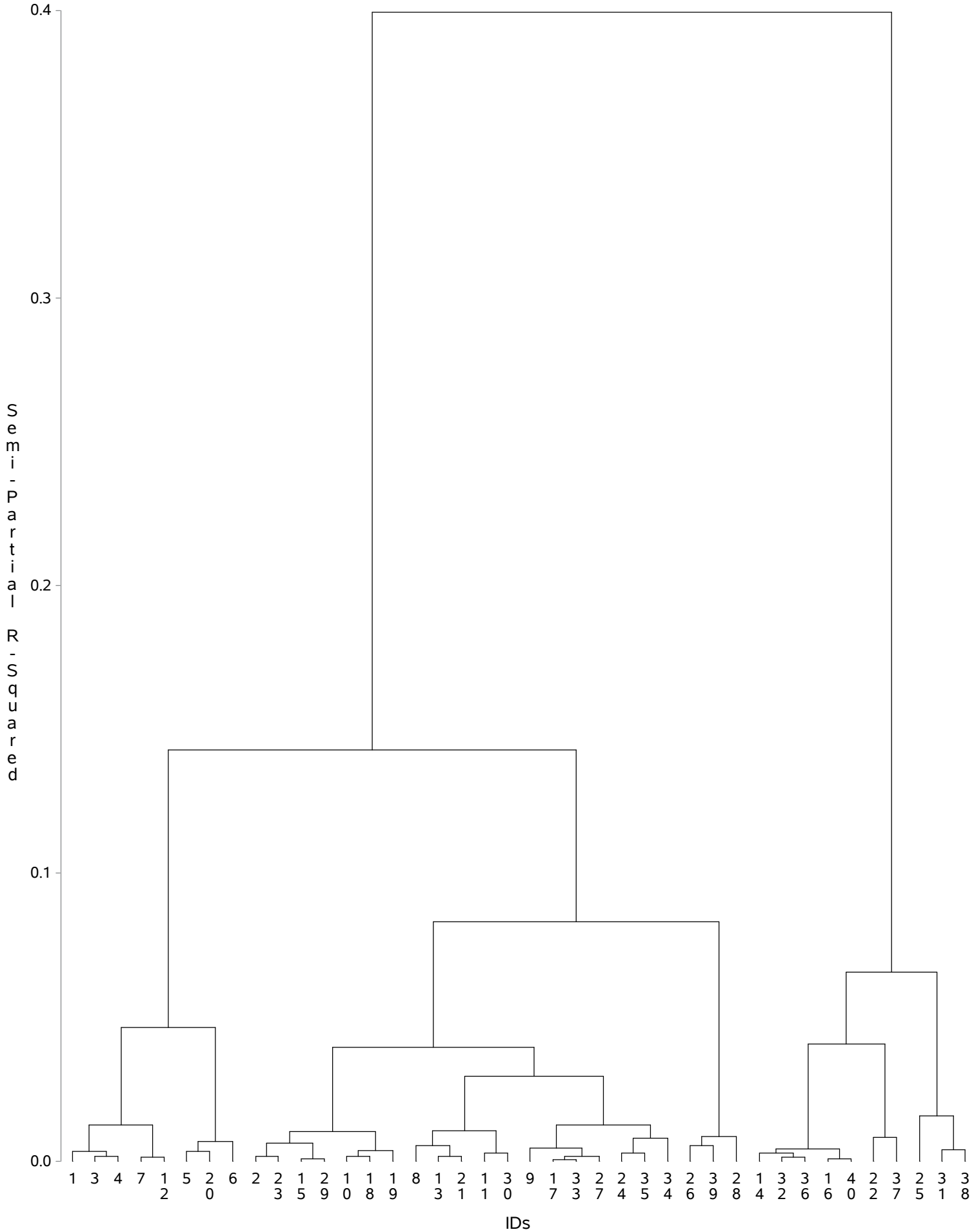
Root-Mean-Square Total-Sample Standard Deviation	7.10858

Root-Mean-Square Distance Between Observations	24.62485

Cluster History						
Number of Clusters	Clusters Joined		Freq	Semipartial R-Square	R-Square	Tie
39	17	33	2	0.0005	.999	
38	16	40	2	0.0006	.999	
37	15	29	2	0.0008	.998	
36	32	36	2	0.0012	.997	
35	7	12	2	0.0013	.996	
34	13	21	2	0.0015	.994	
33	2	23	2	0.0016	.992	
32	10	18	2	0.0016	.991	
31	3	4	2	0.0016	.989	
30	CL39	27	3	0.0017	.987	
29	11	30	2	0.0027	.985	
28	24	35	2	0.0028	.982	
27	14	CL36	3	0.0029	.979	
26	1	CL31	3	0.0032	.976	
25	5	20	2	0.0032	.973	
24	CL32	19	3	0.0035	.969	
23	31	38	2	0.0038	.965	
22	CL27	CL38	5	0.0041	.961	
21	9	CL30	4	0.0043	.957	
20	8	CL34	3	0.0053	.952	
19	26	39	2	0.0053	.946	
18	CL33	CL37	4	0.0063	.940	

The CLUSTER Procedure
Ward's Minimum Variance Cluster Analysis

Cluster History						
Number of Clusters	Clusters Joined		Freq	Semipartial R-Square	R-Square	Tie
17	CL25	6	3	0.0068	.933	
16	CL28	34	3	0.0079	.925	
15	22	37	2	0.0083	.917	
14	CL19	28	3	0.0085	.908	
13	CL18	CL24	7	0.0103	.898	
12	CL20	CL29	5	0.0106	.888	
11	CL21	CL16	7	0.0124	.875	
10	CL26	CL35	5	0.0126	.863	
9	25	CL23	3	0.0157	.847	
8	CL12	CL11	12	0.0295	.817	
7	CL13	CL8	19	0.0394	.778	
6	CL22	CL15	7	0.0405	.737	
5	CL10	CL17	8	0.0464	.691	
4	CL6	CL9	10	0.0656	.625	
3	CL7	CL14	22	0.0833	.542	
2	CL5	CL3	30	0.1427	.399	
1	CL2	CL4	40	0.3992	.000	


0.4
0.3
0.2
0.1
0.0
Semi-Partial R-Squared
1 3 4 7 12 5 20 6 2 23 15 29 10 18 19 8 13 21 11 30 9 17 33 27 24 35 34 26 39 28 14 32 36 16 40 22 37 25 31 38
IDs

The GLM Procedure

Class Level Information		
Class	Levels	Values
CLUSTER	2	1 2

Number of Observations Read	40
Number of Observations Used	40

The GLM Procedure

Dependent Variable: Math

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1613.333333	1613.333333	33.20	<.0001
Error	38	1846.666667	48.596491		
Corrected Total	39	3460.000000			

R-Square	Coeff Var	Root MSE	Math Mean
0.466281	8.768702	6.971118	79.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
CLUSTER	1	1613.333333	1613.333333	33.20	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
CLUSTER	1	1613.333333	1613.333333	33.20	<.0001

The GLM Procedure

Dependent Variable: Physics

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	2448.033333	2448.033333	67.61	<.0001
Error	38	1375.866667	36.207018		
Corrected Total	39	3823.900000			

R-Square	Coeff Var	Root MSE	Physics Mean
0.640193	7.759158	6.017227	77.55000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
CLUSTER	1	2448.033333	2448.033333	67.61	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
CLUSTER	1	2448.033333	2448.033333	67.61	<.0001

The GLM Procedure

Dependent Variable: English

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	255.208333	255.208333	7.09	0.0113
Error	38	1368.566667	36.014912		
Corrected Total	39	1623.775000			

R-Square	Coeff Var	Root MSE	English Mean
0.157170	6.931842	6.001243	86.57500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
CLUSTER	1	255.2083333	255.2083333	7.09	0.0113

Source	DF	Type III SS	Mean Square	F Value	Pr > F
CLUSTER	1	255.2083333	255.2083333	7.09	0.0113

The GLM Procedure

Dependent Variable: History

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	300.833333	300.833333	5.25	0.0276
Error	38	2178.266667	57.322807		
Corrected Total	39	2479.100000			

R-Square	Coeff Var	Root MSE	History Mean
0.121348	8.870747	7.571183	85.35000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
CLUSTER	1	300.8333333	300.8333333	5.25	0.0276

Source	DF	Type III SS	Mean Square	F Value	Pr > F
CLUSTER	1	300.8333333	300.8333333	5.25	0.0276

The GLM Procedure

Dependent Variable: GPA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.10208333	0.10208333	17.92	0.0001
Error	38	0.21642667	0.00569544		
Corrected Total	39	0.31851000			

R-Square	Coeff Var	Root MSE	GPA Mean
0.320503	2.033359	0.075468	3.711500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
CLUSTER	1	0.10208333	0.10208333	17.92	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
CLUSTER	1	0.10208333	0.10208333	17.92	0.0001

The GLM Procedure

Dependent Variable: NSECH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	102.6750000	102.6750000	11.66	0.0015
Error	38	334.7000000	8.8078947		
Corrected Total	39	437.3750000			

R-Square	Coeff Var	Root MSE	NSECH Mean
0.234753	35.43653	2.967810	8.375000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
CLUSTER	1	102.6750000	102.6750000	11.66	0.0015

Source	DF	Type III SS	Mean Square	F Value	Pr > F
CLUSTER	1	102.6750000	102.6750000	11.66	0.0015

The GLM Procedure

Level of CLUSTER	N	Math		Physics		English		History	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
1	30	83.1666667	7.57529257	82.0666667	6.04542194	88.0333333	5.67197182	86.9333333	7.09022315
2	10	68.5000000	4.50308536	64.0000000	5.92546294	82.2000000	6.95701085	80.6000000	8.94675608

Level of CLUSTER	N	GPA		NSECH	
		Mean	Std Dev	Mean	Std Dev
1	30	3.74066667	0.07376259	9.30000000	3.21794537
2	10	3.62400000	0.08071899	5.60000000	1.95505044

The FREQ Procedure

Frequency Percent Row Pct Col Pct	Table of AdvM by CLUSTER		
	CLUSTER		
AdvM	1	2	Total
No	12 30.00 60.00 40.00	8 20.00 40.00 80.00	20 50.00
Yes	18 45.00 90.00 60.00	2 5.00 10.00 20.00	20 50.00
Total	30 75.00	10 25.00	40 100.00