```
* ---------------------------------------------------------------.
* 1. Import cleaned CSV file.
* This assumes the CSV contains case_id as the first column.
* ---------------------------------------------------------------.

GET DATA
  /TYPE=TXT
  /FILE='D:\low kda score priority basis posts\first post\Kolmogorov Smirnov T
est\student_por_kolmogorov_smirnov_test_clean.csv'
  /ENCODING='UTF8'
  /DELCASE=LINE
  /DELIMITERS=","
  /QUALIFIER='"'
  /ARRANGEMENT=DELIMITED
  /FIRSTCASE=2
  /VARIABLES=
    case_id F8.0
    school A8
    sex A8
    age F8.0
    address A8
    famsize A8
    Pstatus A8
    Medu F8.0
    Fedu F8.0
    Mjob A20
    Fjob A20
    reason A20
    guardian A20
    traveltime F8.0
    studytime F8.0
    failures F8.0
    schoolsup A8
    famsup A8
    paid A8
    activities A8
    nursery A8
    higher A8
    internet A8
    romantic A8
    famrel F8.0
    freetime F8.0
```

```
    goout F8.0
    Dalc F8.0
    Walc F8.0
    health F8.0
    absences F8.0
    G1 F8.0
    G2 F8.0
    G3 F8.0
.
CACHE.
EXECUTE.

DATASET NAME Student_KS WINDOW=FRONT.
```

Dataset Name

Notes

Output Created		01-JUN-2026 14:35:29
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		DATASET NAME Student_KS WINDOW=FRONT.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Warnings

The active dataset will replace the existing dataset named Student_KS.

```
VARIABLE LABELS
  case_id   'Case ID'
```

```
  school    'School'
  sex       'Student sex'
  age       'Student age'
  Medu      'Mother education'
  Fedu      'Father education'
  studytime 'Weekly study time category'
  failures  'Number of past class failures'
  absences  'School absences'
  G1        'First period grade'
  G2        'Second period grade'
  G3        'Final grade'
.

VARIABLE LEVEL
  age absences G1 G2 G3 (SCALE)
  Medu Fedu studytime failures traveltime famrel freetime goout Dalc Walc heal
th (ORDINAL)
  school sex address famsize Pstatus Mjob Fjob reason guardian schoolsup famsu
p paid activities nursery higher internet romantic (NOMINAL)
.

FORMATS case_id age Medu Fedu traveltime studytime failures famrel freetime go
out Dalc Walc health absences G1 G2 G3 (F8.0).

* ----------------------------------------------------------------.
* 2. Create grouping variables.
* ----------------------------------------------------------------.

NUMERIC school_num sex_num studytime_group G3_band (F8.0).

IF (UPCASE(RTRIM(LTRIM(school))) = 'GP') school_num = 1.
IF (UPCASE(RTRIM(LTRIM(school))) = 'MS') school_num = 2.

IF (UPCASE(RTRIM(LTRIM(sex))) = 'F') sex_num = 1.
IF (UPCASE(RTRIM(LTRIM(sex))) = 'M') sex_num = 2.

IF (studytime <= 2) studytime_group = 1.
IF (studytime >= 3) studytime_group = 2.

RECODE G3
  (Lowest THRU 5 = 1)
  (6 THRU 10 = 2)
```

```
  (11 THRU 15 = 3)
  (16 THRU Highest = 4)
  INTO G3_band.

VARIABLE LABELS
  school_num      'School numeric group'
  sex_num         'Sex numeric group'
  studytime_group 'Studytime group for two-sample KS'
  G3_band         'G3 final-grade band'
.

VALUE LABELS school_num
  1 'school GP'
  2 'school MS'
.

VALUE LABELS sex_num
  1 'sex F'
  2 'sex M'
.

VALUE LABELS studytime_group
  1 'low studytime: <=5 hours'
  2 'higher studytime: 5+ hours'
.

VALUE LABELS G3_band
  1 'Very low final grade: 0-5'
  2 'Low to mid final grade: 6-10'
  3 'Good final grade: 11-15'
  4 'High final grade: 16-20'
.

VARIABLE LEVEL school_num sex_num studytime_group G3_band (NOMINAL).

EXECUTE.

* ---------------------------------------------------------------.
* 3. Dataset checks.
* ---------------------------------------------------------------.

TITLE 'KS Dataset Check'.
```

```
FREQUENCIES VARIABLES=school sex school_num sex_num studytime studytime_group
G3_band
  /ORDER=ANALYSIS.
```

Frequencies

Notes

Output Created		01-JUN-2026 14:35:29
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=school sex school_num sex_num studytime studytime_group G3_band /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.01

```
[Student_KS]
```

Statistics

		School	Student sex	School numeric group	Sex numeric group	Weekly study time category
N	Valid	649	649	649	649	649
	Missing	0	0	0	0	0

Statistics

		Studytime group for two-sample KS	G3 final-grade band
N	Valid	649	649
	Missing	0	0

Frequency Table

School

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GP	423	65.2	65.2	65.2
	MS	226	34.8	34.8	100.0
	Total	649	100.0	100.0	

Student sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	F	383	59.0	59.0	59.0
	M	266	41.0	41.0	100.0
	Total	649	100.0	100.0	

School numeric group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	423	65.2	65.2	65.2
	2	226	34.8	34.8	100.0
	Total	649	100.0	100.0	

Sex numeric group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	383	59.0	59.0	59.0
	2	266	41.0	41.0	100.0
	Total	649	100.0	100.0	

Weekly study time category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	212	32.7	32.7	32.7
	2	305	47.0	47.0	79.7
	3	97	14.9	14.9	94.6
	4	35	5.4	5.4	100.0
	Total	649	100.0	100.0	

Studytime group for two-sample KS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	517	79.7	79.7	79.7
	2	132	20.3	20.3	100.0
	Total	649	100.0	100.0	

G3 final-grade band

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	2.6	2.6	2.6
	2	180	27.7	27.7	30.4
	3	370	57.0	57.0	87.4
	4	82	12.6	12.6	100.0
	Total	649	100.0	100.0	

```
DESCRIPTIVES VARIABLES=failures studytime absences Fedu Medu age G1 G2 G3
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

Notes

Output Created		01-JUN-2026 14:35:29
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=failures studytime absences Fedu Medu age G1 G2 G3 /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Number of past class failures	649	0	3	.22	.593
Weekly study time category	649	1	4	1.93	.830
School absences	649	0	32	3.66	4.641
Father education	649	0	4	2.31	1.100
Mother education	649	0	4	2.51	1.135
Student age	649	15	22	16.74	1.218
First period grade	649	0	19	11.40	2.745
Second period grade	649	0	19	11.57	2.914
Final grade	649	0	19	11.91	3.231
Valid N (listwise)	649				

```
* ------------------------------------------------------------.
* 4. One-sample Kolmogorov-Smirnov tests.
* SPSS applies Lilliefors correction when normal parameters are estimated.
* ------------------------------------------------------------.

TITLE 'One-Sample KS Tests'.
```

```
NPAR TESTS
  /K-S(NORMAL)=failures studytime absences Fedu Medu age G3 G2 G1
  /MISSING ANALYSIS.
```

NPar Tests

Notes

Output Created		01-JUN-2026 14:35:29
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable (s) used in that test.
Syntax		NPAR TESTS /K-S(NORMAL)=failures studytime absences Fedu Medu age G3 G2 G1 /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01
	Number of Cases Allowed[a]	262144

a. Based on availability of workspace memory.

One-Sample Kolmogorov-Smirnov Test

		Number of past class failures	Weekly study time category	School absences
N		649	649	649
Normal Parameters[a,b]	Mean	.22	1.93	3.66
	Std. Deviation	.593	.830	4.641
Most Extreme Differences	Absolute	.492	.263	.215
	Positive	.492	.263	.204
	Negative	-.354	-.207	-.215
Test Statistic		.492	.263	.215
Asymp. Sig. (2-tailed)		.000[c]	.000[c]	.000[c]

One-Sample Kolmogorov-Smirnov Test

		Father education	Mother education	Student age	Final grade
N		649	649	649	649
Normal Parameters[a,b]	Mean	2.31	2.51	16.74	11.91
	Std. Deviation	1.100	1.135	1.218	3.231
Most Extreme Differences	Absolute	.211	.191	.175	.124
	Positive	.211	.191	.175	.074
	Negative	-.135	-.174	-.138	-.124
Test Statistic		.211	.191	.175	.124
Asymp. Sig. (2-tailed)		.000[c]	.000[c]	.000[c]	.000[c]

One-Sample Kolmogorov-Smirnov Test

		Second period grade	First period grade
N		649	649
Normal Parameters[a,b]	Mean	11.57	11.40
	Std. Deviation	2.914	2.745
Most Extreme Differences	Absolute	.088	.086
	Positive	.088	.086
	Negative	-.076	-.065
Test Statistic		.088	.086
Asymp. Sig. (2-tailed)		.000[c]	.000[c]

One-Sample KS Tests

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

```
* ------------------------------------------------------------------.
* 5. G3-focused normality support output.
* ------------------------------------------------------------------.

TITLE 'KS Test Focus: G3 Final Grade'.
```

```
EXAMINE VARIABLES=G3
  /PLOT BOXPLOT HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```

Explore

Notes

Output Created		01-JUN-2026 14:35:29
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=G3 /PLOT BOXPLOT HISTOGRAM NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE...

KS Test Focus: G3 Final Grade

Notes

Resources	Processor Time	00:00:02.61
	Elapsed Time	00:00:01.11

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Final grade	649	100.0%	0	0.0%	649	100.0%

Descriptives

			Statistic	Std. Error
Final grade	Mean		11.91	.127
	95% Confidence Interval for Mean	Lower Bound	11.66	
		Upper Bound	12.16	
	5% Trimmed Mean		12.06	
	Median		12.00	
	Variance		10.437	
	Std. Deviation		3.231	
	Minimum		0	
	Maximum		19	
	Range		19	
	Interquartile Range		4	
	Skewness		-.913	.096
	Kurtosis		2.712	.192

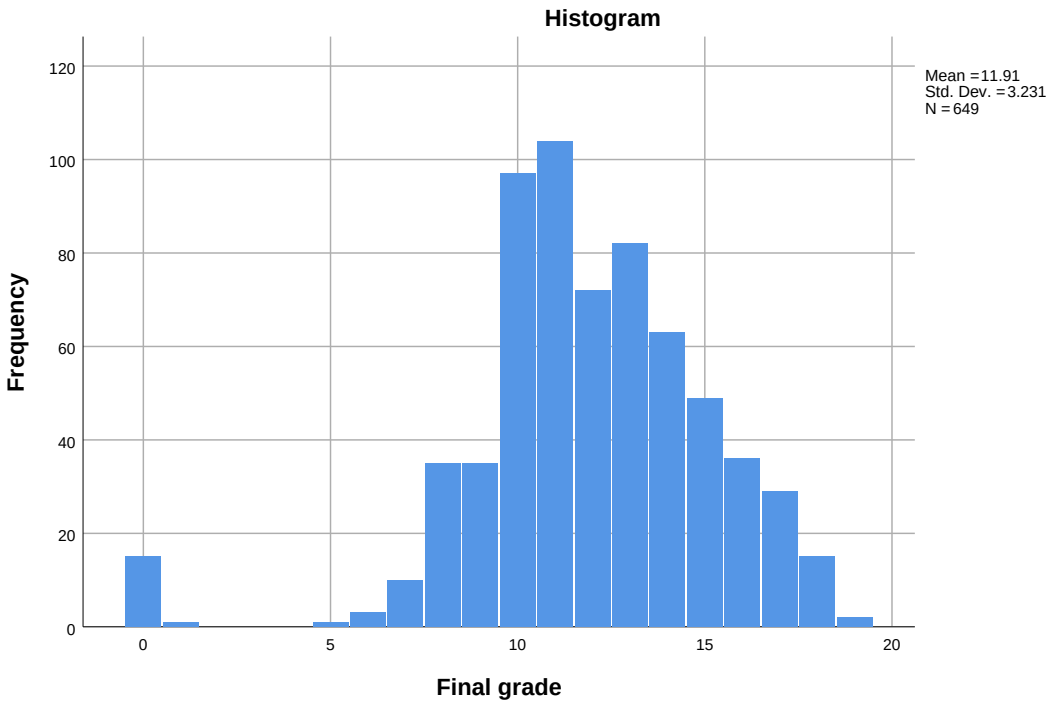
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Final grade	.124	649	.000	.926	649	.000

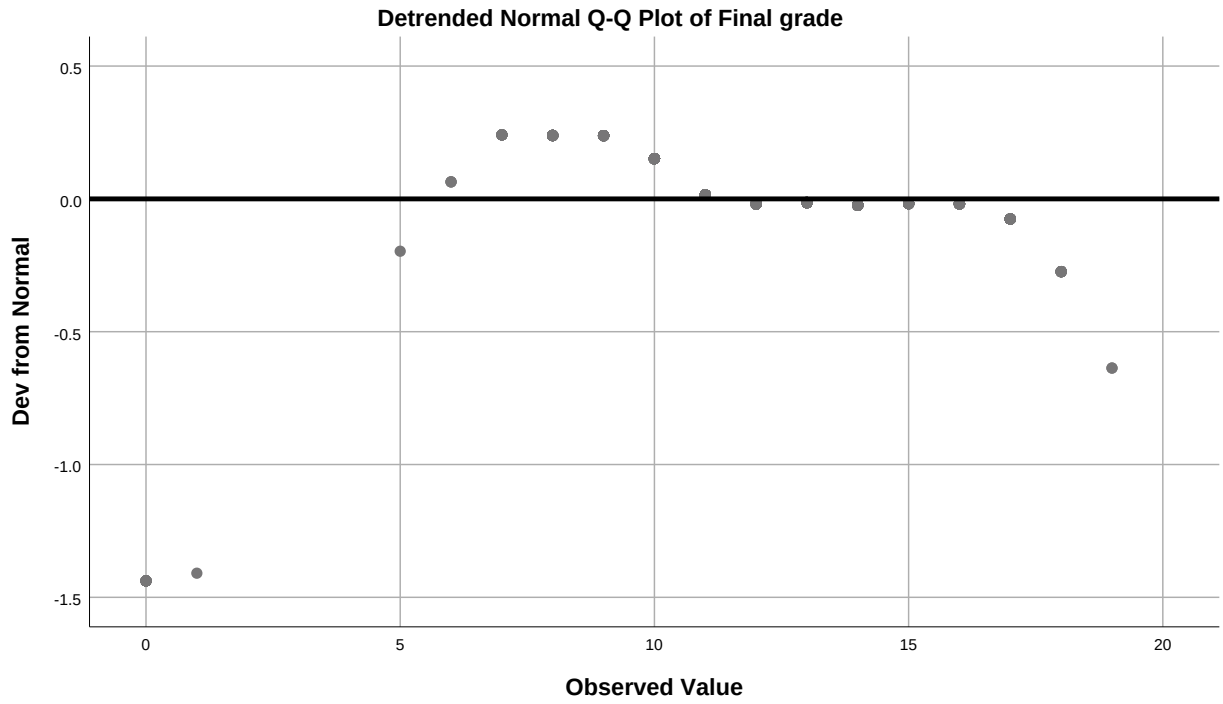
a. Lilliefors Significance Correction

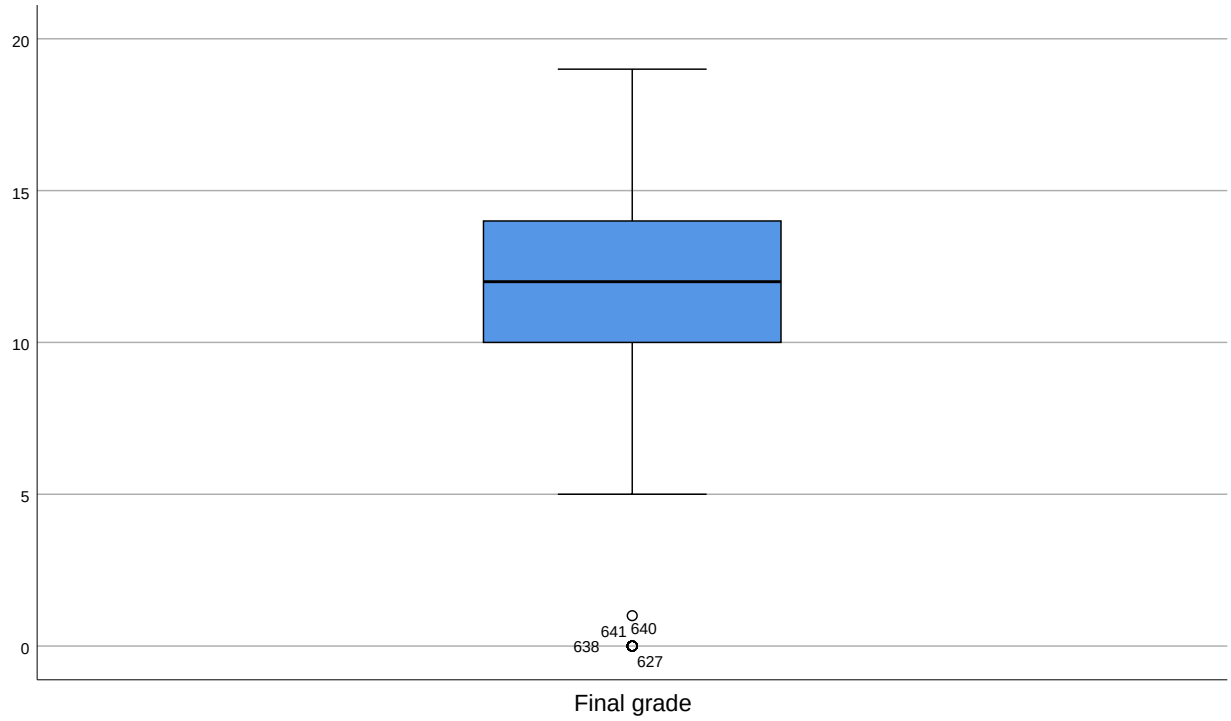
Final grade

KS Test Focus: G3 Final Grade



KS Test Focus: G3 Final Grade





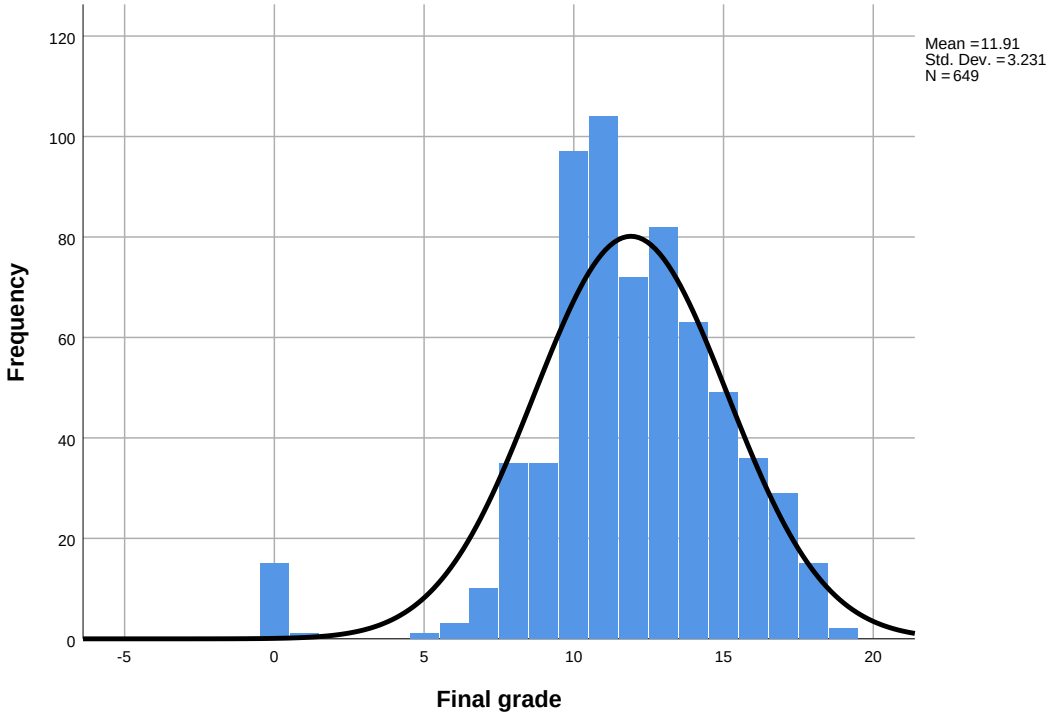

```
GRAPH
  /HISTOGRAM(NORMAL)=G3.
```

Graph

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /HISTOGRAM(NORMAL) =G3.
Resources	Processor Time	00:00:00.64
	Elapsed Time	00:00:00.23

KS Test Focus: G3 Final Grade




```
FREQUENCIES VARIABLES=G3 G3_band
  /ORDER=ANALYSIS.
```

Frequencies

KS Test Focus: G3 Final Grade

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=G3 G3_band /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Statistics

		Final grade	G3 final-grade band
N	Valid	649	649
	Missing	0	0

Frequency Table

Final grade

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	15	2.3	2.3	2.3
	1	1	.2	.2	2.5
	5	1	.2	.2	2.6
	6	3	.5	.5	3.1
	7	10	1.5	1.5	4.6
	8	35	5.4	5.4	10.0
	9	35	5.4	5.4	15.4
	10	97	14.9	14.9	30.4
	11	104	16.0	16.0	46.4
	12	72	11.1	11.1	57.5
	13	82	12.6	12.6	70.1
	14	63	9.7	9.7	79.8
	15	49	7.6	7.6	87.4
	16	36	5.5	5.5	92.9
	17	29	4.5	4.5	97.4
	18	15	2.3	2.3	99.7
	19	2	.3	.3	100.0
	Total	649	100.0	100.0	

G3 final-grade band

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	2.6	2.6	2.6
	2	180	27.7	27.7	30.4
	3	370	57.0	57.0	87.4
	4	82	12.6	12.6	100.0
	Total	649	100.0	100.0	

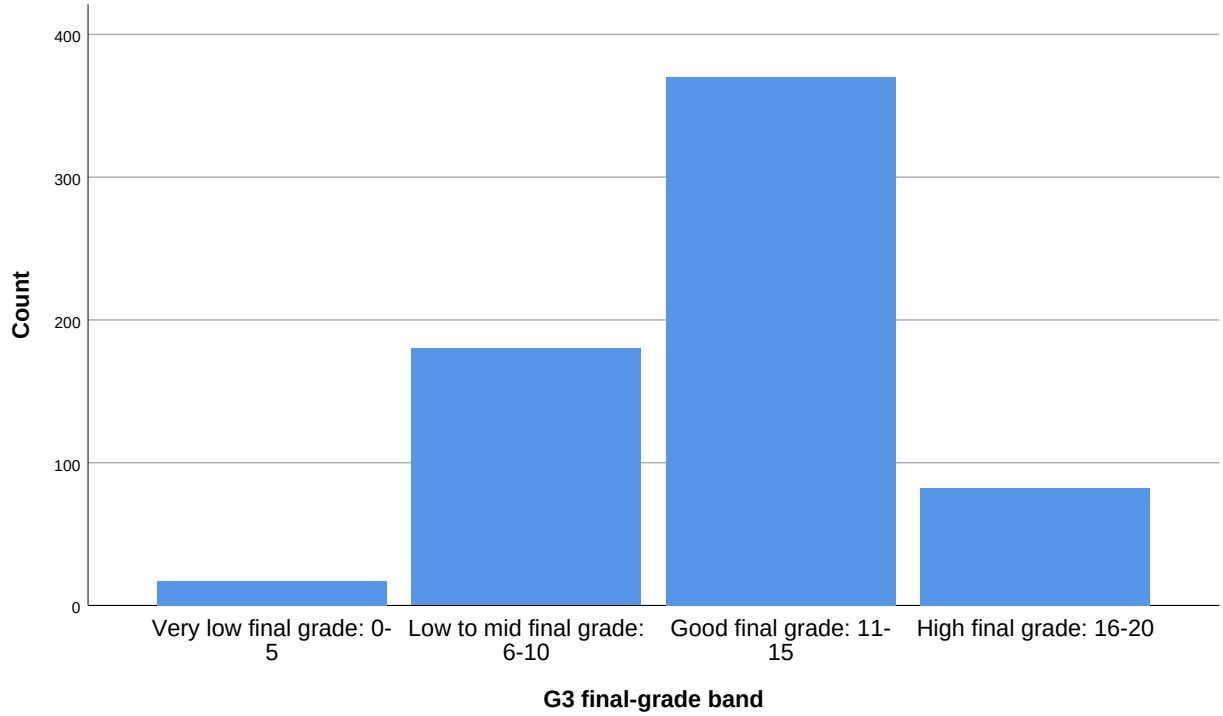
```
GRAPH
  /BAR(SIMPLE)=COUNT BY G3_band.
```

Graph

KS Test Focus: G3 Final Grade

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /BAR(SIMPLE)=COUNT BY G3_band.
Resources	Processor Time	00:00:00.95
	Elapsed Time	00:00:00.34



```
* ------------------------------------------------------------.
* 6. Two-sample Kolmogorov-Smirnov tests for G3.
* ------------------------------------------------------------.

TITLE 'Two-Sample KS: G3 by School'.
```

```
NPAR TESTS
  /K-S=G3 BY school_num(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /K-S=G3 BY school_num (1 2) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.02
	Number of Cases Allowed[a]	449389

a. Based on availability of workspace memory.

Two-Sample Kolmogorov-Smirnov Test

Two-Sample KS: G3 by School

Frequencies

	School numeric group	N
Final grade	1	423
	2	226
	Total	649

Test Statistics[a]

		Final grade
Most Extreme Differences	Absolute	.295
	Positive	.007
	Negative	-.295
Kolmogorov-Smirnov Z		3.576
Asymp. Sig. (2-tailed)		.000

a. Grouping Variable: School numeric group

```
TITLE 'Two-Sample KS: G3 by Studytime'.
```

```
NPAR TESTS
  /K-S=G3 BY studytime_group(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /K-S=G3 BY studytime_group(1 2) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01
	Number of Cases Allowed[a]	449389

a. Based on availability of workspace memory.

Two-Sample Kolmogorov-Smirnov Test

Two-Sample KS: G3 by Studytime

Frequencies

	Studytime group for two-sample KS	N
Final grade	1	517
	2	132
	Total	649

Test Statistics[a]

		Final grade
Most Extreme Differences	Absolute	.240
	Positive	.240
	Negative	.000
Kolmogorov-Smirnov Z		2.459
Asymp. Sig. (2-tailed)		.000

a. Grouping Variable: Studytime group for two-sample KS

```
TITLE 'Two-Sample KS: G3 by Sex'.
```

```
NPAR TESTS
  /K-S=G3 BY sex_num(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /K-S=G3 BY sex_num(1 2) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.02
	Number of Cases Allowed[a]	449389

a. Based on availability of workspace memory.

Two-Sample Kolmogorov-Smirnov Test

Two-Sample KS: G3 by Sex

Frequencies

	Sex numeric group	N
Final grade	1	383
	2	266
	Total	649

Test Statistics[a]

		Final grade
Most Extreme Differences	Absolute	.138
	Positive	.001
	Negative	-.138
Kolmogorov-Smirnov Z		1.727
Asymp. Sig. (2-tailed)		.005

a. Grouping Variable: Sex numeric group

```
* ------------------------------------------------------------.
* 7. Group descriptive summaries for article interpretation.
* ------------------------------------------------------------.

TITLE 'G3 Descriptives by School'.
```

```
MEANS TABLES=G3 BY school_num
  /CELLS=COUNT MEAN MEDIAN STDDEV MIN MAX.
```

Means

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	For each dependent variable in a table, user-defined missing values for the dependent and all grouping variables are treated as missing.
	Cases Used	Cases used for each table have no missing values in any independent variable, and not all dependent variables have missing values.
Syntax		MEANS TABLES=G3 BY school_num /CELLS=COUNT MEAN MEDIAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

G3 Descriptives by School

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Final grade * School numeric group	649	100.0%	0	0.0%	649	100.0%

Report

Final grade

School numeric group	N	Mean	Median	Std. Deviation	Minimum	Maximum
1	423	12.58	13.00	2.626	0	19
2	226	10.65	11.00	3.834	0	19
Total	649	11.91	12.00	3.231	0	19

```
TITLE 'G3 Descriptives by Studytime'.
```

```
MEANS TABLES=G3 BY studytime_group
  /CELLS=COUNT MEAN MEDIAN STDDEV MIN MAX.
```

Means

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	For each dependent variable in a table, user-defined missing values for the dependent and all grouping variables are treated as missing.
	Cases Used	Cases used for each table have no missing values in any independent variable, and not all dependent variables have missing values.
Syntax		MEANS TABLES=G3 BY studytime_group /CELLS=COUNT MEAN MEDIAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.11
	Elapsed Time	00:00:00.05

G3 Descriptives by Studytime

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Final grade * Studytime group for two-sample KS	649	100.0%	0	0.0%	649	100.0%

Report

Final grade

Studytime group for two-sample KS	N	Mean	Median	Std. Deviation	Minimum	Maximum
1	517	11.58	11.00	3.288	0	19
2	132	13.18	13.00	2.644	6	19
Total	649	11.91	12.00	3.231	0	19

```
TITLE 'G3 Descriptives by Sex'.
```

G3 Descriptives by Sex

```
MEANS TABLES=G3 BY sex_num
  /CELLS=COUNT MEAN MEDIAN STDDEV MIN MAX.
```

Means

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	For each dependent variable in a table, user-defined missing values for the dependent and all grouping variables are treated as missing.
	Cases Used	Cases used for each table have no missing values in any independent variable, and not all dependent variables have missing values.
Syntax		MEANS TABLES=G3 BY sex_num /CELLS=COUNT MEAN MEDIAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.03

G3 Descriptives by Sex

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Final grade * Sex numeric group	649	100.0%	0	0.0%	649	100.0%

Report

Final grade

Sex numeric group	N	Mean	Median	Std. Deviation	Minimum	Maximum
1	383	12.25	12.00	3.124	0	19
2	266	11.41	11.00	3.321	0	19
Total	649	11.91	12.00	3.231	0	19

```
* ------------------------------------------------------------.
* 8. Correct grouped boxplots.
* These replace invalid GRAPH /BOXPLOT commands.
* ------------------------------------------------------------.

TITLE 'G3 Boxplot by School'.
```

G3 Boxplot by School

```
EXAMINE VARIABLES=G3 BY school_num
  /PLOT BOXPLOT
  /STATISTICS NONE
  /MISSING LISTWISE
  /NOTOTAL.
```

Explore

Notes

Output Created		01-JUN-2026 14:35:31
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=G3 BY school_num /PLOT BOXPLOT /STATISTICS NONE /MISSING LISTWISE...
Resources	Processor Time	00:00:00.67
	Elapsed Time	00:00:00.36

School numeric group

G3 Boxplot by School

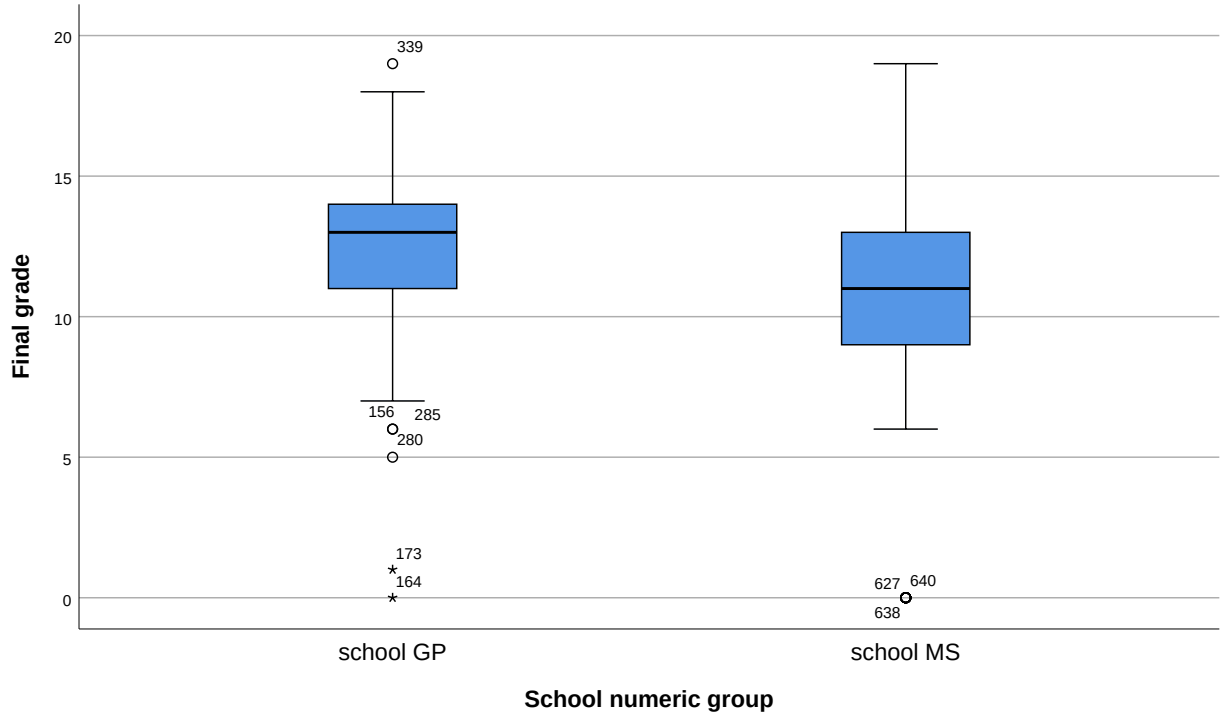
Case Processing Summary

		Cases				
		Valid		Missing		Total
	School numeric group	N	Percent	N	Percent	N
Final grade	1	423	100.0%	0	0.0%	423
	2	226	100.0%	0	0.0%	226

Case Processing Summary

		Cases
		Total
	School numeric group	Percent
Final grade	1	100.0%
	2	100.0%

Final grade




```
TITLE 'G3 Boxplot by Studytime'.
```

G3 Boxplot by Studytime

```
EXAMINE VARIABLES=G3 BY studytime_group
  /PLOT BOXPLOT
  /STATISTICS NONE
  /MISSING LISTWISE
  /NOTOTAL.
```

Explore

Notes

Output Created		01-JUN-2026 14:35:32
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=G3 BY studytime_group /PLOT BOXPLOT /STATISTICS NONE /MISSING LISTWISE...
Resources	Processor Time	00:00:00.47
	Elapsed Time	00:00:00.25

Studytime group for two-sample KS

G3 Boxplot by Studytime

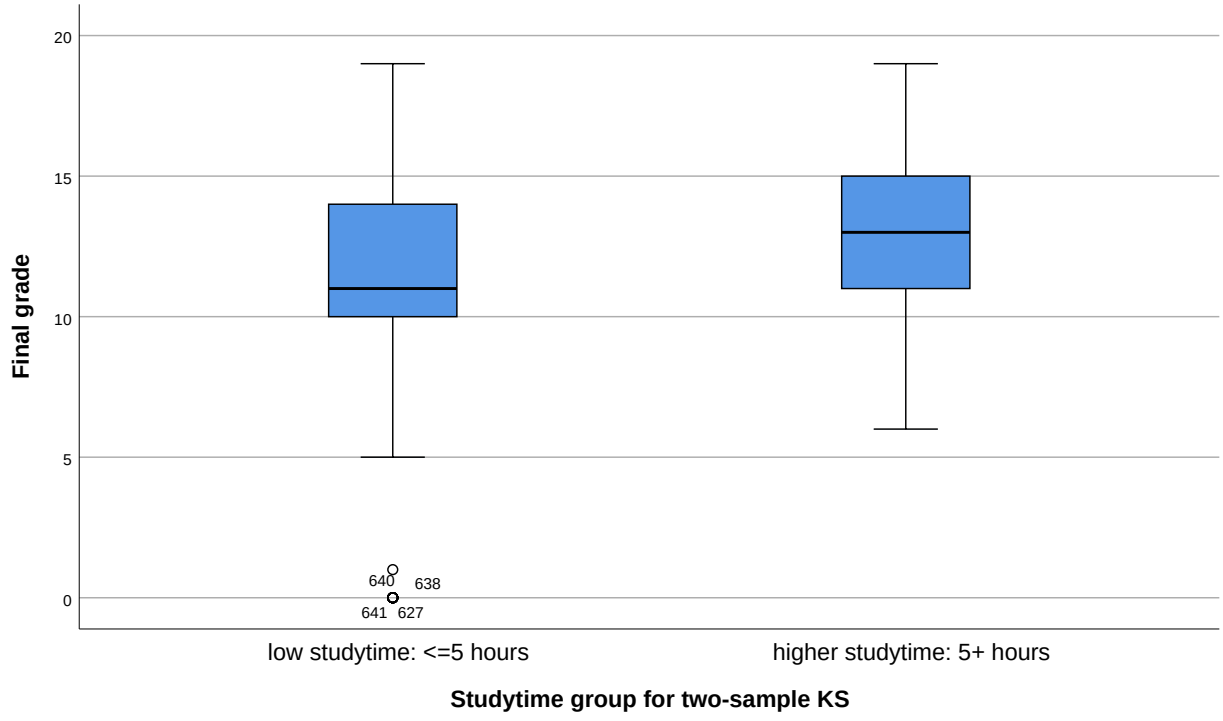
Case Processing Summary

	Studytime group for two-sample KS	Cases				
		Valid		Missing		Total
		N	Percent	N	Percent	N
Final grade	1	517	100.0%	0	0.0%	517
	2	132	100.0%	0	0.0%	132

Case Processing Summary

	Studytime group for two-sample KS	Cases
		Total
		Percent
Final grade	1	100.0%
	2	100.0%

Final grade




```
TITLE 'G3 Boxplot by Sex'.
```

G3 Boxplot by Sex

```
EXAMINE VARIABLES=G3 BY sex_num
  /PLOT BOXPLOT
  /STATISTICS NONE
  /MISSING LISTWISE
  /NOTOTAL.
```

Explore

Notes

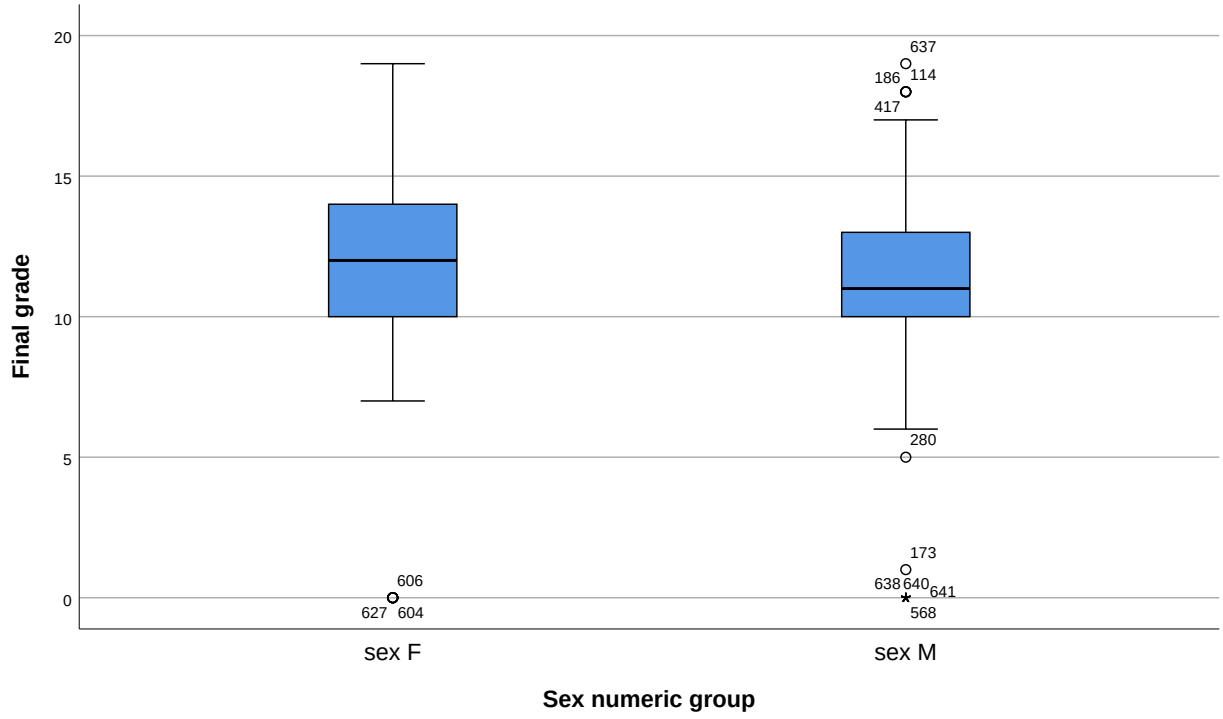
Output Created		01-JUN-2026 14:35:32
Comments		
Input	Data	D:\low kda score priority basis posts\first post\Kolmogorov Smirnov Test\student_por_kolmogorov_smirnov_test_clean.csv
	Active Dataset	Student_KS
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=G3 BY sex_num /PLOT BOXPLOT /STATISTICS NONE /MISSING LISTWISE...
Resources	Processor Time	00:00:00.78
	Elapsed Time	00:00:00.30

Sex numeric group

Case Processing Summary

		Cases					
		Valid		Missing		Total	
	Sex numeric group	N	Percent	N	Percent	N	Percent
Final grade	1	383	100.0%	0	0.0%	383	100.0%
	2	266	100.0%	0	0.0%	266	100.0%

Final grade




```
* ---------------------------------------------------------------.
* 9. Article-style summary charts using simple SPSS GRAPH syntax.
* These replace the GPL/GGRAPH code that caused id('...') errors.
* ---------------------------------------------------------------.

DATASET ACTIVATE Student_KS.

DATA LIST LIST /
  variable (A12)
  ks_d (F10.6)
  neg_log10_p (F10.4).
```

```
BEGIN DATA
failures 0.491721 16.0000
studytime 0.263302 16.0000
absences 0.215187 16.0000
Fedu 0.210713 16.0000
Medu 0.191122 16.0000
age 0.174684 16.0000
G3 0.123520 8.3621
G2 0.087581 4.0542
G1 0.086295 3.9275
END DATA.

DATASET NAME KS_OneSample_Summary WINDOW=FRONT.
```

Dataset Name

Notes

Output Created		01-JUN-2026 14:35:32
Comments		
Input	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9
Syntax		DATASET NAME KS_OneSample_Summary WINDOW=FRONT.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Warnings

The active dataset will replace the existing dataset named KS_OneSample_Summary.

```
TITLE 'KS D Statistic Across Variables'.
```

```
GRAPH
  /BAR(SIMPLE)=MEAN(ks_d) BY variable.
```

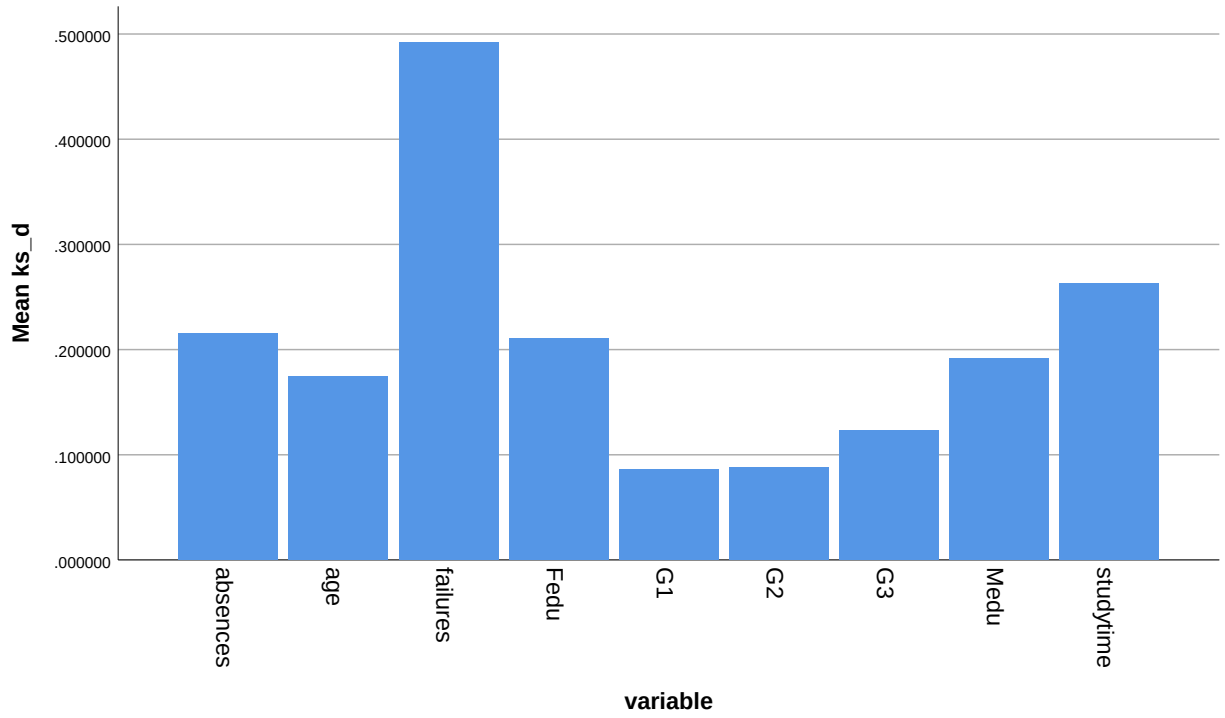
Graph

Notes

Output Created		01-JUN-2026 14:35:33
Comments		
Input	Active Dataset	KS_OneSample_Summary
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9
Syntax		GRAPH /BAR(SIMPLE)=MEAN (ks_d) BY variable.
Resources	Processor Time	00:00:00.58
	Elapsed Time	00:00:00.29

[KS_OneSample_Summary]

KS D Statistic Across Variables



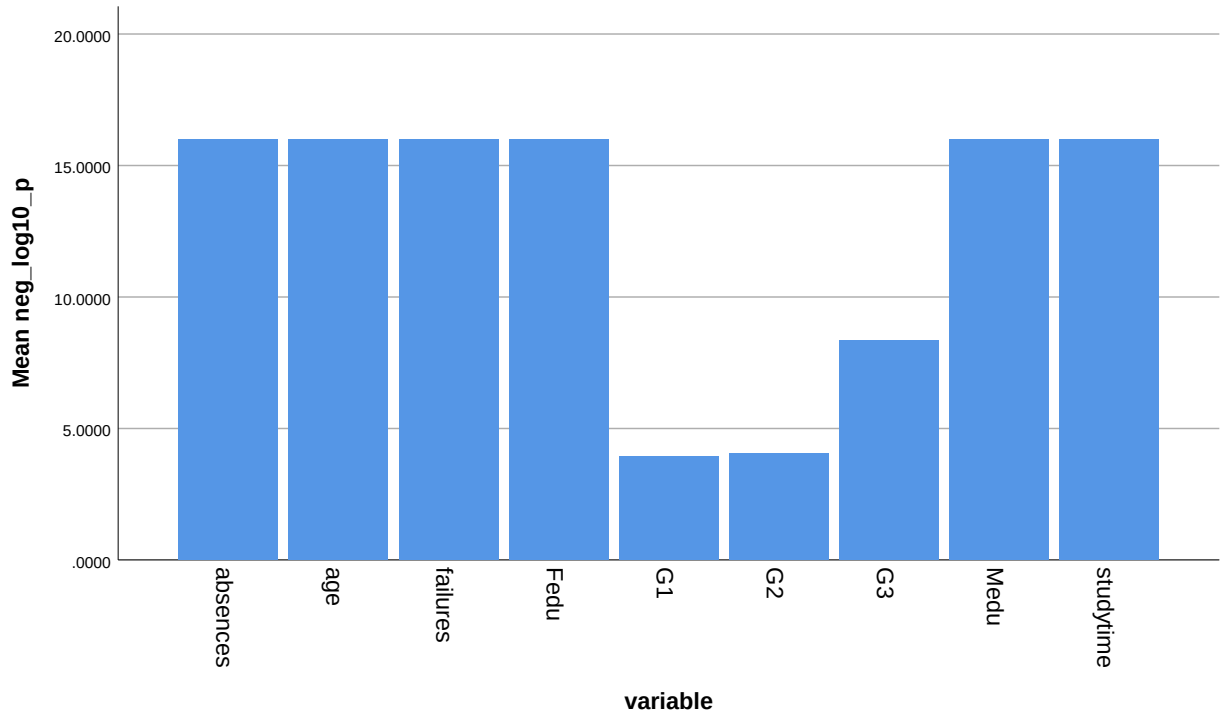

```
TITLE 'Approximate P-Value Strength Across Variables'.
```

```
GRAPH
  /BAR(SIMPLE)=MEAN(neg_log10_p) BY variable.
```

Graph

Notes

Output Created		01-JUN-2026 14:35:33
Comments		
Input	Active Dataset	KS_OneSample_Summary
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9
Syntax		GRAPH /BAR(SIMPLE)=MEAN (neg_log10_p) BY variable.
Resources	Processor Time	00:00:00.50
	Elapsed Time	00:00:00.23




```
DATA LIST LIST /
  comparison (A60)
  group_d (F10.6).
BEGIN DATA
'G3 by school GP vs school MS' 0.294630
'G3 by low studytime vs higher studytime' 0.239845
'G3 by sex F vs sex M' 0.137802
END DATA.

DATASET NAME KS_TwoSample_Summary WINDOW=FRONT.
```

Dataset Name

Notes

Output Created		01-JUN-2026 14:35:33
Comments		
Input	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	3
Syntax		DATASET NAME KS_TwoSample_Summary WINDOW=FRONT.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Warnings

The active dataset will replace the existing dataset named KS_TwoSample_Summary.

```
TITLE 'Two-Sample KS D Statistic by Comparison'.
```

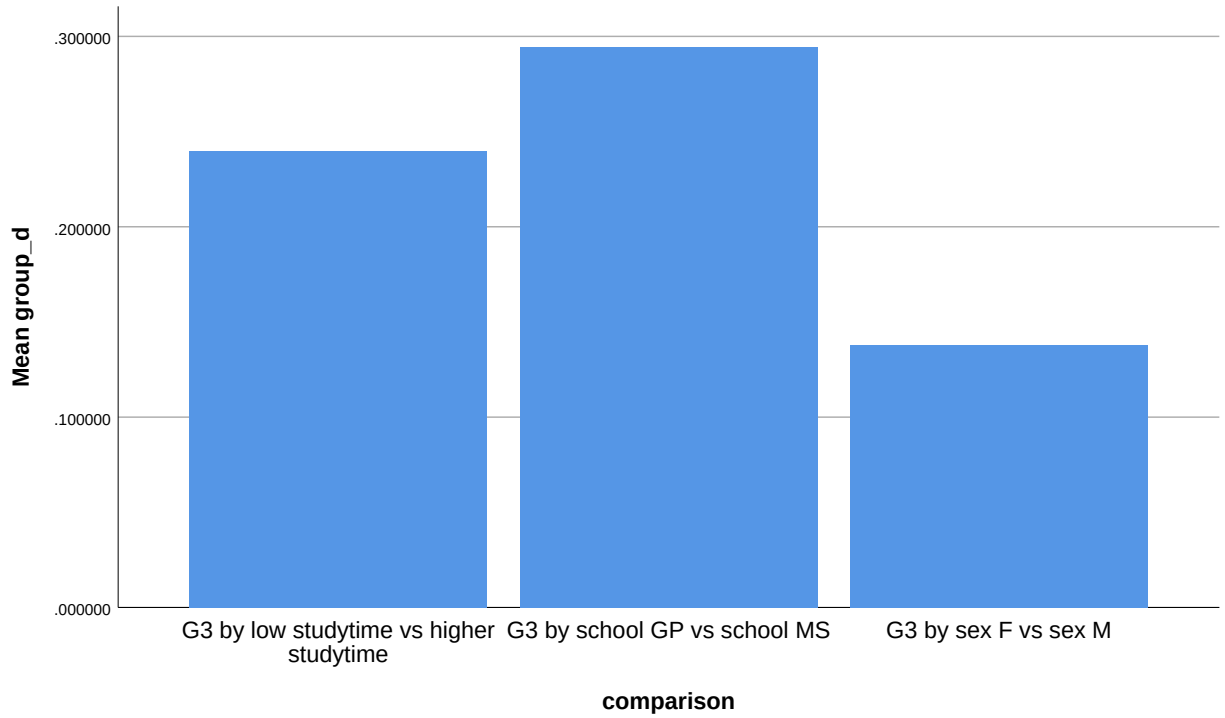
```
GRAPH
  /BAR(SIMPLE)=MEAN(group_d) BY comparison.
```

Graph

Notes

Output Created		01-JUN-2026 14:35:33
Comments		
Input	Active Dataset	KS_TwoSample_Summary
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	3
Syntax		GRAPH /BAR(SIMPLE)=MEAN (group_d) BY comparison.
Resources	Processor Time	00:00:00.44
	Elapsed Time	00:00:00.21

[KS_TwoSample_Summary]




```
* ------------------------------------------------------------.
* 10. Save dataset and export output.
* ------------------------------------------------------------.

DATASET ACTIVATE Student_KS.

SAVE OUTFILE='D:\low kda score priority basis posts\first post\Kolmogorov Smir
nov Test\SPSS\kolmogorov_smirnov_test_spss_dataset.sav'
  /COMPRESSED.

OUTPUT SAVE OUTFILE='D:\low kda score priority basis posts\first post\Kolmogor
ov Smirnov Test\SPSS\Kolmogorov_Smirnov_Test_SPSS_Output_Corrected.spv'.

OUTPUT EXPORT
  /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING
  /PDF DOCUMENTFILE='D:\low kda score priority basis posts\first post\Kolmogor
ov Smirnov Test\SPSS\Kolmogorov_Smirnov_Test_SPSS_Output_Corrected.pdf'
       EMBEDBOOKMARKS=YES
```