

Your temporary usage period for IBM SPSS Statistics will expire in 3498 days.

```
* =====.
* One Sample Z Test - CLEAN NO-ERROR SPSS Syntax
* Uses Python-cleaned data file:
*   spss_ready_data.csv
*
* Folder:
*   D:\low kda score priority basis posts\first post\One Sample Z Test
*
* Main test:
*   H0: mu = 11.5
*   H1: mu > 11.5
*   Known population sigma = 3.23
*
* Expected result:
*   n = 649
*   mean = 11.906009
*   known sigma = 3.23
*   SE = 0.126789
*   z = 3.202254
*   right-tailed p = 0.000682, report as p < .001
*   two-sided p = 0.001364
*   95% z CI = [11.657508, 12.154510]
* =====.
```

CD 'D:\low kda score priority basis posts\first post\One Sample Z Test'.

HOST COMMAND='cmd /c if not exist "D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS" mkdir "D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS"'.

Host

HOST COMMAND='cmd /c if not exist "D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\output" mkdir "D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\output"'.

Host

```
HOST COMMAND='cmd /c if not exist "D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\tables" mkdir "D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\tables"'
```

Host

```
GET DATA
  /TYPE=TXT
  /FILE='D:\low kda score priority basis posts\first post\One Sample Z Test\sp
ss_ready_data.csv'
  /ENCODING='UTF8'
  /DELCASE=LINE
  /DELIMITERS=", "
  /QUALIFIER='"'
  /ARRANGEMENT=DELIMITED
  /FIRSTCASE=2
  /IMPORTCASE=ALL
  /VARIABLES=
    school A240
    sex A240
    age F12.4
    address A240
    famsize A240
    Pstatus A240
    Medu F12.4
    Fedu F12.4
    Mjob A240
    Fjob A240
    reason A240
    guardian A240
    traveltime F12.4
    studytime F12.4
    failures F12.4
    schoolsup A240
    famsup A240
    paid A240
    activities A240
    nursery A240
    higher A240
    internet A240
    romantic A240
```

```
famrel F12.4
freetime F12.4
goout F12.4
Dalc F12.4
Walc F12.4
health F12.4
absences F12.4
G1 F12.4
G2 F12.4
G3 F12.4.

CACHE.
EXECUTE.

DATASET NAME SPSSReadyData WINDOW=FRONT.

WEIGHT OFF.
FILTER OFF.
USE ALL.
SPLIT FILE OFF.
EXECUTE.

VARIABLE LABELS
  G3 "Final grade used for one-sample z test"
  G1 "First period grade"
  G2 "Second period grade"
  age "Student age"
  absences "Number of school absences"
  studytime "Weekly study time category"
  failures "Number of past class failures".

FORMATS G1 G2 G3 age absences studytime failures (F8.2).

SAVE OUTFILE='D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\spss_ready_data_imported_NO_ERROR.sav'.

TITLE 'SPSS Import Check: G3 Valid Cases'.
```

SPSS Import Check: G3 Valid Cases

```
FREQUENCIES VARIABLES=G3
  /STATISTICS=MEAN MEDIAN STDDEV MINIMUM MAXIMUM
  /FORMAT=NOTABLE
  /ORDER=ANALYSIS.
```

Frequencies

[SPSSReadyData] D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\spss_ready_data_imported_NO_ERROR.sav

Statistics

Final grade used for one-sample z test

N	Valid	649
	Missing	0
Mean		11.9060
Median		12.0000
Std. Deviation		3.23066
Minimum		.00
Maximum		19.00

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

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Final grade used for one-sample z test	649	.00	19.00	11.9060	3.23066
First period grade	649	.00	19.00	11.3991	2.74527
Second period grade	649	.00	19.00	11.5701	2.91364
Student age	649	15.00	22.00	16.7442	1.21814
Number of school absences	649	.00	32.00	3.6595	4.64076
Weekly study time category	649	1.00	4.00	1.9307	.82951
Number of past class failures	649	.00	3.00	.2219	.59324
Valid N (listwise)	649				

SPSS Import Check: G3 Valid Cases

TITLE 'Reference One-Sample T Test'.

Reference One-Sample T Test

T-TEST

/TESTVAL=11.5

/MISSING=ANALYSIS

/VARIABLES=G3

/CRITERIA=CI (.95) .

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Final grade used for one-sample z test	649	11.9060	3.23066	.12681

One-Sample Test

Test Value = 11.5

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence ... Lower
Final grade used for one-sample z test	3.202	648	.001	.40601	.1570

One-Sample Test

Test Value = ...

95% Confidence
Interval of the ...

Upper

Final grade used for one-sample z test	.6550
--	-------

TITLE 'Descriptive Mean G3 by School'.

Descriptive Mean G3 by School

```
MEANS TABLES=G3 BY school  
  /CELLS=MEAN COUNT STDDEV SEMEAN.
```

Means

Case Processing Summary

	Included		Cases Excluded		Total	
	N	Percent	N	Percent	N	Percent
Final grade used for one-sample z test * school	649	100.0%	0	0.0%	649	100.0%

Report

Final grade used for one-sample z test

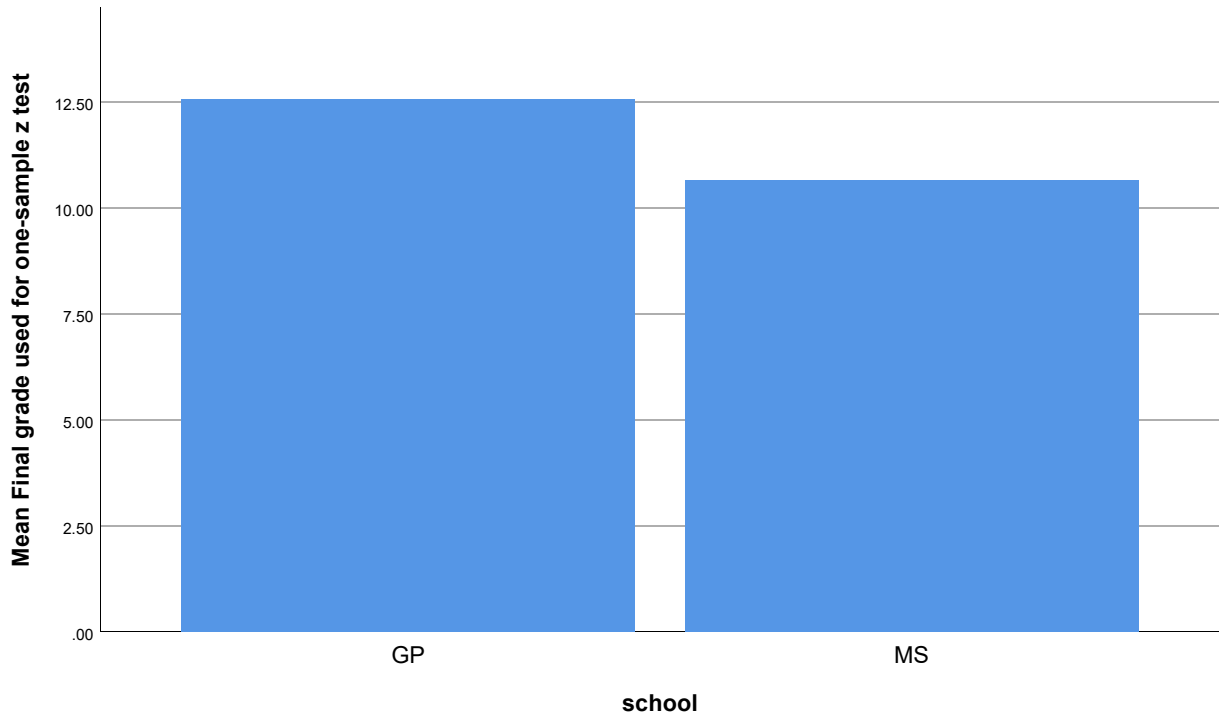
school	Mean	N	Std. Deviation	Std. Error of Mean
GP	12.5768	423	2.62564	.12766
MS	10.6504	226	3.83399	.25503
Total	11.9060	649	3.23066	.12681

```
GRAPH
```

```
  /BAR (SIMPLE) =MEAN (G3) BY school.
```

Graph

Descriptive Mean G3 by School



TITLE 'Descriptive Mean G3 by Sex'.

Descriptive Mean G3 by Sex

```
MEANS TABLES=G3 BY sex  
/CELLS=MEAN COUNT STDDEV SEMEAN.
```

Means

Case Processing Summary

	Included		Cases Excluded		Total	
	N	Percent	N	Percent	N	Percent
Final grade used for one-sample z test * sex	649	100.0%	0	0.0%	649	100.0%

Report

Final grade used for one-sample z test

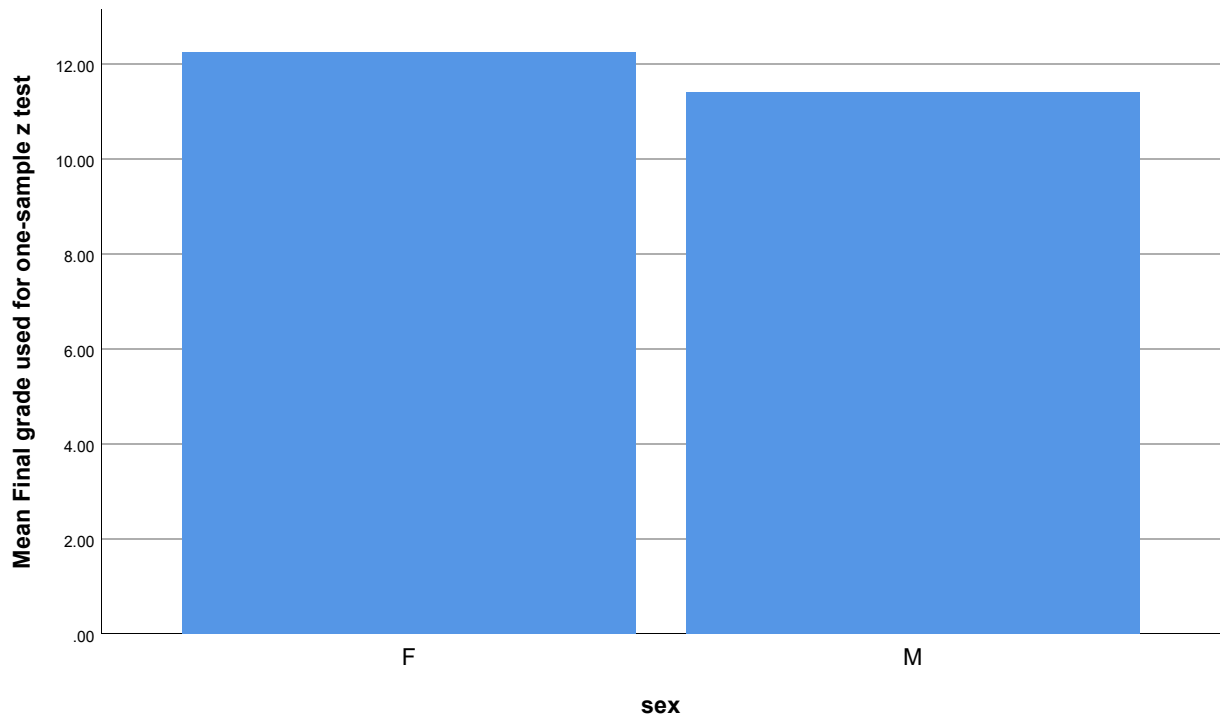
sex	Mean	N	Std. Deviation	Std. Error of Mean
F	12.2533	383	3.12415	.15964
M	11.4060	266	3.32069	.20360
Total	11.9060	649	3.23066	.12681

GRAPH

```
/BAR (SIMPLE) =MEAN (G3) BY sex.
```

Graph

Descriptive Mean G3 by Sex



```
DATASET ACTIVATE SPSSReadyData.
```

```
AGGREGATE
```

```
  /OUTFILE='D:\low kda score priority basis posts\first post\One Sample Z Test  
\SPSS\tables\one_sample_z_test_spss_summary_NO_ERROR.sav'
```

```
  /BREAK=
```

```
  /N_G3=N(G3)
```

```
  /MEAN_G3=MEAN(G3)
```

```
  /SD_G3=SD(G3)
```

```
  /MEDIAN_G3=MEDIAN(G3)
```

```
  /MIN_G3=MIN(G3)
```

```
  /MAX_G3=MAX(G3).
```

```
GET FILE='D:\low kda score priority basis posts\first post\One Sample Z Test\S  
PSS\tables\one_sample_z_test_spss_summary_NO_ERROR.sav'.
```

```
DATASET NAME ZSummary WINDOW=FRONT.
```

```
COMPUTE mu0 = 11.5.
```

```
COMPUTE known_sigma = 3.23.
```

```
COMPUTE alpha = .05.
```

Descriptive Mean G3 by Sex

```
COMPUTE se_known = known_sigma / SQRT(N_G3).
COMPUTE z_statistic = (MEAN_G3 - mu0) / se_known.
COMPUTE p_value_right = 1 - CDF.NORMAL(z_statistic, 0, 1).
COMPUTE p_value_left = CDF.NORMAL(z_statistic, 0, 1).
COMPUTE p_value_two_sided = 2 * (1 - CDF.NORMAL(ABS(z_statistic), 0, 1)).
COMPUTE zcrit_95 = IDF.NORMAL(.975, 0, 1).
COMPUTE ci_95_lower = MEAN_G3 - zcrit_95 * se_known.
COMPUTE ci_95_upper = MEAN_G3 + zcrit_95 * se_known.
COMPUTE standardized_mean_difference = (MEAN_G3 - mu0) / known_sigma.

STRING decision (A30).
STRING report_p_right (A20).
STRING interpretation (A180).

DO IF (p_value_right < alpha).
  COMPUTE decision = "Reject H0".
  COMPUTE interpretation = "The sample mean is significantly greater than 11.5
  using the known population sigma assumption.".
ELSE.
  COMPUTE decision = "Fail to reject H0".
  COMPUTE interpretation = "There is not enough evidence that the sample mean
  is greater than 11.5.".
END IF.

DO IF (p_value_right < .001).
  COMPUTE report_p_right = "p < .001".
ELSE.
  COMPUTE report_p_right = STRING(p_value_right, F10.6).
END IF.

EXECUTE.

FORMATS
  N_G3 (F8.0)
  MEAN_G3 SD_G3 mu0 known_sigma se_known z_statistic p_value_right p_value_lef
t
  p_value_two_sided ci_95_lower ci_95_upper standardized_mean_difference alpha
(F12.6).
```

Descriptive Mean G3 by Sex

```
SAVE OUTFILE='D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\tables\one_sample_z_test_spss_manual_result_NO_ERROR.sav'.
```

```
TITLE 'SPSS Manual One Sample Z Test Result'.
```

SPSS Manual One Sample Z Test Result

```
LIST VARIABLES=  
  N_G3  
  MEAN_G3  
  SD_G3  
  mu0  
  known_sigma  
  se_known  
  z_statistic  
  p_value_right  
  p_value_two_sided  
  ci_95_lower  
  ci_95_upper  
  standardized_mean_difference  
  decision  
  report_p_right  
  interpretation  
  /CASES=FROM 1 TO 1.
```

List

[ZSummary] D:\low kda score priority basis posts\first post\One Sample Z Test\
SPSS\tables\one_sample_z_test_spss_manual_result_NO_ERROR.sav

The variables are listed in the following order:

```
LINE 1: N_G3 MEAN_G3 SD_G3 mu0 known_sigma se_known z_statistic p_value_righ  
t p_value_two_sided
```

```
LINE 2: ci_95_lower ci_95_upper standardized_mean_difference decision report  
_p_right
```

```
LINE 3: interpretation
```

SPSS Manual One Sample Z Test Result

```
      N_G3:      649      11.906009      3.230656      11.500000      3.230000
      .126789      3.202254      .000682      .001364
ci_95_lower:      11.657508      12.154510      .125699 Reject H0
      p < .001
```

interpretati: The sample mean is significantly greater than 11.5 using the known population sigma assumption.

Number of cases read: 1 Number of cases listed: 1

```
SAVE TRANSLATE OUTFILE='D:\low kda score priority basis posts\first post\One S
ample Z Test\SPSS\tables\one_sample_z_test_spss_manual_result_NO_ERROR.csv'
  /TYPE=CSV
  /ENCODING='UTF8'
  /MAP
  /REPLACE
  /FIELDNAMES
  /CELLS=VALUES.
```

Data written to D:\low kda score priority basis posts\...\SPSS\tables\one_sample_z_test_spss_manual_result_NO_ERROR.csv.

21 variables and 1 cases written.

Variable: N_G3	Type: Number	Width: 8	Dec: 0
Variable: MEAN_G3	Type: Number	Width: 12	Dec: 6
Variable: SD_G3	Type: Number	Width: 12	Dec: 6
Variable: MEDIAN_G3	Type: Number	Width: 8	Dec: 2
Variable: MIN_G3	Type: Number	Width: 8	Dec: 2
Variable: MAX_G3	Type: Number	Width: 8	Dec: 2
Variable: mu0	Type: Number	Width: 12	Dec: 6
Variable: known_sigma	Type: Number	Width: 12	Dec: 6
Variable: alpha	Type: Number	Width: 12	Dec: 6
Variable: se_known	Type: Number	Width: 12	Dec: 6
Variable: z_statistic	Type: Number	Width: 12	Dec: 6
Variable: p_value_right	Type: Number	Width: 12	Dec: 6
Variable: p_value_left	Type: Number	Width: 12	Dec: 6
Variable: p_value_two_sided	Type: Number	Width: 12	Dec: 6
Variable: zcrit_95	Type: Number	Width: 8	Dec: 2

SPSS Manual One Sample Z Test Result

Variable: ci_95_lower	Type: Number	Width: 12	Dec: 6
Variable: ci_95_upper	Type: Number	Width: 12	Dec: 6
Variable: standardized_mean_difference	Type: Number	Width: 12	Dec: 6
Variable: decision	Type: String	Width: 30	
Variable: report_p_right	Type: String	Width: 20	
Variable: interpretation	Type: String	Width: 180	

```
DATA LIST LIST /
  component_id (F8.0)
  component (A45)
  value (F12.6)
  explanation (A120).
BEGIN DATA
1 "Sample size n" 649 "Number of valid G3 observations"
2 "Sample mean x-bar" 11.906009 "Observed mean of G3"
3 "Hypothesized mean mu0" 11.500000 "Null hypothesis benchmark mean"
4 "Known sigma" 3.230000 "Known population SD assumed for the z test"
5 "Standard error" 0.126789 "known_sigma divided by square root of n"
6 "Z statistic" 3.202254 "Observed standardized test statistic"
7 "Right-tailed p-value" 0.000682 "Main p-value for H1: mu greater than mu0"
8 "Two-sided p-value" 0.001364 "Two-sided p-value for comparison"
9 "95% CI lower" 11.657508 "Lower bound of the 95% z confidence interval"
10 "95% CI upper" 12.154510 "Upper bound of the 95% z confidence interval"
END DATA.
DATASET NAME FormulaTable WINDOW=FRONT.

TITLE 'Formula Components for One Sample Z Test'.
```

Formula Components for One Sample Z Test

```
LIST VARIABLES=component_id component value explanation  
/CASES=FROM 1 TO 10.
```

List

[FormulaTable]

The variables are listed in the following order:

LINE 1: component_id component value

LINE 2: explanation

Formula Components for One Sample Z Test

component_id: 0000	1 Sample size n	649.00
explanation:	Number of valid G3 observations	
component_id: 6009	2 Sample mean x-bar	11.90
explanation:	Observed mean of G3	
component_id: 0000	3 Hypothesized mean mu0	11.50
explanation:	Null hypothesis benchmark mean	
component_id: 0000	4 Known sigma	3.23
explanation:	Known population SD assumed for the z test	
component_id: 6789	5 Standard error	.12
explanation:	known_sigma divided by square root of n	
component_id: 2254	6 Z statistic	3.20
explanation:	Observed standardized test statistic	
component_id: 0682	7 Right-tailed p-value	.00
explanation:	Main p-value for H1: mu greater than mu0	
component_id: 1364	8 Two-sided p-value	.00
explanation:	Two-sided p-value for comparison	
component_id: 7508	9 95% CI lower	11.65
explanation:	Lower bound of the 95% z confidence interval	

Formula Components for One Sample Z Test

component_id: 10 95% CI upper 12.15
4510

explanation: Upper bound of the 95% z confidence interval

Number of cases read: 10 Number of cases listed: 10

OUTPUT EXPORT

```
/CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING  
/PDF DOCUMENTFILE='D:\low kda score priority basis posts\first post\One Samp  
le Z Test\SPSS\output\One-Sample-Z-Test-SPSS-output-NO-ERROR.pdf'  
EMBEDBOOKMARKS=YES  
EMBEDFONTS=YES.
```

Output Export

Export Summary

Viewer	Document1
Document File	D:\low kda score priority basis posts\first post\One Sample Z Test\SPSS\output\One-Sample-Z-Test-SPSS-output-NO-ERROR.pdf