Casio fx-82AU

Statistical calculations

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Learning Skills

Introduction:

This sheet will teach you how to use the Casio fx82AU calculator to perform statistical operations. See also our handout for mathematical functions. Any further queries please contact Student Central.

This sheet will teach you to:

- Change settings on your calculator
- Put your calculator into statistical mode
- Enter observations
- Display the descriptive statistics
- Enter group data
- Perform linear regression

1. Settings on your calculator

To turn your calculator on: ON

Your screen should show a small D and Math at the top of the screen

You need to change a couple of default settings before you start. Once you change these they will stay changed and will enable you to better use your calculator.

1. Get out of Math mode into linear mode

Calculator steps: shift setup 2

The math will disappear from the screen. While in Math mode your answer will be given as fractions, even if you put in the information using the ÷ key. This is mentioned in our math handout

2. Change the default so that small decimal answers read in decimal format rather than exponent format. To check if this needs to happen

Enter 1 ÷ 200 =

If your answer shows as $5\times_{10}-3$

Calculator steps: shift setup 8 2

Until this is reversed your answers will be read as decimals.

2. Calculation Mode

This is the mode where you perform all your standard or non-statistical functions

Calculator steps: MODE 1

3. Statistics Mode

This will enable you to enter data for descriptive statistical analysis. To put your calculate into statistical mode

Calculator steps: MODE 2 1

If you are entering data that is in a frequency table you then need to do the following

Calculator steps: SHIFT SETUP down arrow 3 1

To turn the frequency off

Calculator steps: SHIFT SETUP down arrow 3 2

Frequency mode

This will enable you to enter a score and its frequency. Each score will have a frequency of 1 unless you use the right-arrow to enter a frequency cell and overwrite that frequency. See the section entering observations from a frequency table on how to enter data.

To clear the statistical memory, exit stats mode back to comp mode and re-enter stats mode, this should be done before entering any new data

Calculator steps: MODE 1 MODE 2 1

To check stored data: SHIFT 1 2

4. Entering single variable observations

To enter observations press

[=] after entering the observation

Example 2.1

Enter 10, 12, 13, 16

Calculator steps: [10] [=] [12] [=] [13] [=] [16] [=] [AC]

Number of scores

The number of scores (n) is 4 this is displayed while entering

AC after entering

You press AC after you have finished entering data to tell the calculator that you have completed.

It is also necessary in between displaying the descriptive statistics to clear the previous value

5. Display the Descriptive Statistics

	Calculator symbol	Common symbol	Calculator steps	answer
mean	$\bar{x}$	$\bar{x}$ or μ	[AC] [shift] [1] [5] [2] =	12.75
Sample standard deviation	$x\sigma n-1$	s	[AC] [shift] [1] [5] [4] =	2.5
Population standard deviation	$x\sigma n$	σ	[AC] [shift] [1] [5] [3] =	2.165
Sample variance		s^2	[AC] [shift] [1] [5] [3] = [x^2]	6.25
Scores added up	$\sum x$	$\sum x$	[AC] [1] [4] [2] =	51
Scores squared then added up	$\sum x^2$	$\sum x^2$	[AC] [shift] [1] [4] [1] =	669

Descriptive Statistics

The equal sign must be pressed at the end to bring up the value of the descriptive statistic you are after.

6. Entering observations from a frequency table

To enter observations from a frequency table firstly ensure you have put it in the frequency mode as above, then type in;

= after entering the observation (as above)

Now put in the frequencies;

Using the arrow keys move the curser to the frequency column then type in

= after entering the frequency

Then AC

Example 6.1:

Enter the following table into your calculator

score	frequency
10	12
12	5
13	9
16	7

Calculator steps:

MODE 1 MODE 2 1

SHIFT SETUP down arrow 3 1

10 = 12 = 13 = 16 =

move the curser to the frequency column

12 = 5 = 9 = 7 = AC

Note

1. Remember when entering new data you must clear the memory first
2. The total number of observations is 33

Once the observations are entered the mean and standard deviation are found as above.

If the scores are a sample	**If the scores are a population**
$\bar{x} = 12.394$	$\mu = 12.394$
$s = 2.263$	$\sigma = 2.228$
$s^2 = 5.121$	$\sigma^2 = 4.966$
$\sum x = 409$	$\sum x = 409$
$\sum x^2 = 5233$	$\sum x^2 = 5233$

7. Entering Grouped data

To enter grouped data you first have to find the midpoint of each group. This is done by adding together the lowest and highest value from each group and then dividing it by two. We then use these as our observations.

Example 5.1:

group	frequency
> 0 up to and including 10	25
>10 up to and including 20	33
>20 up to and including 30	21
>30 up to and including 40	30

To find the midpoint of each group:

(0+10)/2=5

(10+20)/2=15

(20+30)/2=25

(30+40)/2=35

Note

The mean and standard deviation are only approximate because we are using each class centre to approximate the individual observations

(n = 109)

Calculator steps:

MODE 1 MODE 2 1

SHIFT SETUP down arrow 3 1

5 = 15 = 25 = 35 =

move the curser to the frequency column

25 = 33 = 21 = 30 = AC

If the scores are a sample	**If the scores are a population**
Approximate: $\bar{x} = 20.138$	Approximate: $\mu = 20.138$
Approximate: $s = 11.272$	Approximate: $\sigma = 11.220$
Approximate: $s^2 = 127.064$	Approximate: $\sigma^2 = 125.898$

8. Linear Regression Mode

To put your calculator into statistics mode press

MODE 2 2

9. Entering x and y data sets

To enter x and y observations, it is the same as entering data from a frequency table except the second column is the y column

= after entering the x observation

Now put in the y observations;

Using the arrow keys move the curser to the y column then type in

= after entering the frequency

Then AC

Example 9.1

x score (independent variable)	**y score (dependent variable)**
5	**20**
8	**18**
6	**22**
7	**28**
10	**27**

Calculator steps:

MODE 1 MODE 2 2

5 = 8 = 6 = 7 = 10 =

move the curser to the y column

20 = 18 = 22 = 28 = 27 = AC

10. Regression output

AC SHIFT 1 7 1 =

this will give A – the y-intercept of the regression line **A = 16.189**

AC SHIFT 1 7 2 =

this will give B – the slope of the regression line **B = 0.946**

AC SHIFT 1 7 3 =

this will give r – the correlation coefficient **r = 0.417**

To find the various sums

$\sum x^2$ AC SHIFT 1 4 1 =

$\sum x^2$ **= 274**

$\sum x$ AC SHIFT 1 4 2 =

$\sum x$ **= 36**

$\sum y^2$ AC SHIFT 1 4 3 =

$\sum y^2$ **= 2721**

$\sum y$ AC SHIFT 1 4 4 =

$\sum y$ **= 115**

$\sum xy$ AC SHIFT 1 4 5 =

$\sum xy$ **= 842**

Press MODE 1 when you are finished with that data and wish to clear it. Re-enter stats mode when you want to enter further scores.

11. For more information

Visit our Learning Skills website at http://www.csu.edu.au/division/studserv/learning

Other useful websites are available at:

http://www.casio.edu.shriro.com.au/downloads/products/fx82/fx-82AU Beginners Guide.pdf