Casio fx-82AU PLUS-Statistics

STAT mode and SETUP

Press **MODE** then press 2 for **STAT**

Now press **AC** (the display should say STAT on the top towards the left)

(now you want the calculator to show the frequency of each bit of data you enter)

Press **SHIFT** then scroll down

Press 3 for **STAT** then 1 to turn the frequency option on

(now you are ready to work with data)

Mean and Standard Deviation

A sample of 15 candles are lit and the number of hours they each burned for (rounded to the nearest hour) is recorded. The data is given below as a dot plot and a frequency table.

Calculate the sample mean ($\bar{x}$) and the sample standard deviation ($s$)

<table>
<thead>
<tr>
<th>time (hrs)</th>
<th>frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>94</td>
<td>1</td>
</tr>
<tr>
<td>96</td>
<td>1</td>
</tr>
<tr>
<td>97</td>
<td>1</td>
</tr>
<tr>
<td>98</td>
<td>1</td>
</tr>
<tr>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td>102</td>
<td>4</td>
</tr>
<tr>
<td>104</td>
<td>3</td>
</tr>
<tr>
<td>105</td>
<td>1</td>
</tr>
<tr>
<td>107</td>
<td>1</td>
</tr>
<tr>
<td>108</td>
<td>1</td>
</tr>
</tbody>
</table>

(source: Casio fx-82AU Plus ‘The useable manual’)

Press **SHIFT** then 1 for **STAT**

Press 1 for **Type** then 1 for 1-variable (now ready to enter the data)

9 4 = and so on (change the frequency by scrolling press = after each change)

Once your data is entered you must press **AC**

$\bar{x} = 101.867$

$s = 3.833$
**Linear Regression**

The table below shows the number of non-Holden cars (N thousands) assembled each year from 1948 to 1959 (yr 1 represents 1948)

<table>
<thead>
<tr>
<th>year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (000)</td>
<td>25.2</td>
<td>22.2</td>
<td>23.9</td>
<td>20.3</td>
<td>15.4</td>
<td>14.4</td>
<td>19.3</td>
<td>20.6</td>
<td>15.1</td>
<td>10.9</td>
<td>13.8</td>
<td>13.2</td>
</tr>
</tbody>
</table>

(a) Find the **equation of the least square regression line** (i.e. find slope & y-intercept)

(b) If the trend continued, **use the equation to predict** the number of non-Holden cars that would have been assembled in 1974.

(source: Casio fx-82AU Plus 'The useable manual')

Press **MODE 2** then choose **2** for the **A + BX** option.

Enter the data, once entered and checked **press AC** (remember to press = after each bit of data)

**SHIFT STAT 5** for **Regression**

The values are:
- **A** – the y-intercept of the least square regression line
- **B** – the slope of the least square line
- **r** – correlation coefficient
- **x** – the predicted value of x given a value of y
- **y** – the predicted value of y given a value of x

1 = for **A** (24.770)

2 = for **B** (-1.063)

equation is:  \( Y = A + BX \)

written in full:

\[
\text{(predicted number of non-Holden)} = 24.770 - 1.063 \times \text{(year)}
\]

\[
\text{cars assembled N (000)}
\]

When the year is 1974 (i.e. \( x = 27 \)) find \( y \)

Press **AC 27**

**SHIFT STAT 5** for **Reg**

Then **5 for y =** (-3.939 thousands) guess the trend didn’t continue!