Statistical Calculations with the Calculator

We will show how to perform basic statistical calculations with the calculator SHARP EL-531W.

Let’s compute the mean and standard deviation for the following sample set of data.

\[12, 15, 7, 14, 22, 11, 8\]

We first put the calculator in statistics mode (Stat 0) by doing the following.

\[
\text{MODE} \quad \triangleright \quad = =
\]

We can now enter the data set one-by-one by using \text{DATA}, which is the \text{M+} button on the calculator.

\[12 \text{ DATA} \quad 15 \text{ DATA} \quad \ldots \quad 8 \text{ DATA}\]

Let’s find the sample mean and sample standard deviation.

\[\text{RCL} \quad \bar{x} \quad \text{gives us} \quad \bar{x} = 12.71\]

\[\text{RCL} \quad s_x \quad \text{gives us} \quad s = 5.02\]

If our data set corresponds to the whole population, we can find the population standard deviation.

\[\text{RCL} \quad \sigma_x \quad \text{gives us} \quad \sigma = 4.65\]

⋆ ⋆ ⋆

Let’s now find the equation of the regression line and the correlation coefficient for following sample set of data.

\[
\begin{array}{c|cccccccc}
 x & 5 & 8 & 10 & 11 & 14 \\
 y & 22 & 26 & 31 & 37 & 42 \\
\end{array}
\]

We will put the calculator in the two-variables statistics mode (Stat 1) by doing the following.

\[
\text{MODE} \quad \triangleright \quad = \quad \triangleright \quad =
\]

We can now enter the data set one-by-one by using \{(x, y)\}, which is the \text{STO} button, and \text{DATA}, which is the \text{M+} button on the calculator.

\[5 \{(x, y)\} \quad 22 \text{ DATA} \quad 8 \{(x, y)\} \quad 26 \text{ DATA} \quad \ldots \quad 14 \{(x, y)\} \quad 42 \text{ DATA}\]

To find the equation of the regression line \(y = a + bx\), we do the following.

\[\text{RCL} \quad a \quad \text{gives us} \quad a = 9.04\]

\[\text{RCL} \quad b \quad \text{gives us} \quad b = 2.35\]

To find the correlation coefficient \(r\), we do the following.

\[\text{RCL} \quad r \quad \text{gives us} \quad r = 0.977\]