2.2 Assignment 2: Understanding mathematical notation

In Statistics, we rely on notations in our discussion of statistical computation and modeling.

For a data set, we use *n* for sample size, or the number of individuals in the data. The variables are represented by letters that are close to the end of the alphabet, such as X, Y and Z. We use letter *i* to index the individuals. Therefore X_i would refer to the value of variable X for the *i*th individual.

One important notation in statistics is the *summation sign,* $\sum$ (capital Greek letter /sigma/). For example

$$\sum_{i=1}^{n} X_i$$

would mean a sum of the n values from X_1 to X_n.

If we replace X_i in the sum above by $(X_i - 3)^2$, then the quantity changes to a sum of $(X_1 - 3)^2$, $(X_2 - 3)^2$, ..., $(X_n - 3)^2$,.

Consider a numerical example:

Individuals	X
1	3

2	7
3	2
4	4

Numerical Input

1/1 point (graded)

X_2 = ?

7 ✔

7

Submit You have used 1 of 1 attempt

✔ Correct (1/1 point)

Numerical Input

1/1 point (graded)

n = ?

4 ✔

4

Submit You have used 1 of 1 attempt

✔ Correct (1/1 point)

Numerical Input

1/1 point (graded)

$\sum_{i=1}^{n} X_i$ = ?

16

16

Submit You have used 1 of 1 attempt

✔ Correct (1/1 point)

Numerical Input

1/1 point (graded)

$\frac{1}{n} \sum_{i=1}^{n} X_i$ = ?

4

4

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Numerical Input

0.0/1.0 point (graded)

$\sum_{i=1}^{n} (X_i - 4)^2$ = ?

Submit

You have used 0 of 1 attempt