

1.3: Summation Convention

For those of you who were ripped off in your high school education, a brief review of an important symbolic convention is given here. This convention will be used in the formulae that you will need to use.

The capital Greek Sigma, \sum , means sum or add. For example, suppose that you have 5 data sample values, represented abstractly by d_1, d_2, d_3, d_4 and d_5 , or more abstractly (using set notation) by:

$$d_i, i \in \{1, 2, 3, 4, 5\} \text{ (or } i = 1, 2, 3, 4, 5)$$

If you want to add the 5 values you would write:

$$d_1 + d_2 + d_3 + d_4 + d_5$$

or

$$\sum_{i=1}^5 d_i$$

Sometimes people get lazy and leave off the *limits* on the summation sign \sum and write

$$\sum d_i$$

where it is hopefully clear that i is the *summation index*. We can also leave off the summation index and write

$$\sum d$$

just to remind us that we need to add up a bunch of numbers generically represented by d . This last convention is useful for us because whenever we need to deal with a sum in a formula, we will get that sum from adding up numbers in a table that we have constructed.

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