

**Worksheet 7.1**

**Read the paragraph, then try to figure out the meaning of the highlighted words without using the dictionary.**

*Boolean algebra is a division of mathematics that* ***deals with*** *operations on logical values and incorporates binary variables. Boolean algebra* ***traces*** *its origins to an 1854 book by mathematician George Boole.*

*The* ***distinguishing*** *factor of Boolean algebra is that it* ***deals only with*** *the study of binary variables. Most commonly Boolean variables are presented with the possible values of 1 ("true") or 0 ("false"). Variables can also have more complex interpretations. Boolean algebra is also* ***known*** *as binary algebra.*

* ***deals with: charge ->cargo***
* ***traces: Discover -> descubrir, traza***
* ***distinguishing: ->diferente***
* ***known: identity -> conocido, identidad***

**Worksheet 7.2**

**Read the following text highlight the words you don´t know and try to infer the meaning from the context without using a dictionary.**

**Boolean Algebra**

Boolean Algebra is fundamental to the operation of software and hardware. If you are in IT, then Boolean Algebra is very important for you. Boolean Algebra is a form to formally specify, or describe, a particular situation or procedure. We use variables to represent elements of our situation or procedure. Variables can take one of only two values: **True** and **False**. So for example, we have a variable **X** that represents “if it is raining outside or not”. The value of **X** is:

* **True** if it is raining outside.
* **False** if it is not raining outside.

It is possible to substitute True and False with other values. When working with computers, True and False is often replaced with **1** and **0**.

**Basic Operations**

There are three basic operations. The result of an operation can only be **True** or **False**.

1. **AND: two expressions: true**

The first operation is **AND**. So for example, I can say, "If it's hot outside **AND** I finished my work, then I will play soccer." To represent this in Boolean Algebra, I can say that:

* **x** represents *if it is hot outside or not*.
* **y** represents *if I finished my work or not*.
* **z** represents *if I play soccer or not*.

**x AND y = z**

Let´s look at the representation of this operation using a Truth table. A truth table is a list of all the possible combinations of inputs and outputs.

|  |  |  |
| --- | --- | --- |
| **X** | **Y** | **Result** |
| False | False | False |
| True | False | False |
| False | True | False |
| True | True | True |

1. **OR**

**OR** means that if one of the two variables is **True** then the result is **True**. So for example, I can say that "I will get home early if I finish work early **OR** the traffic is good". To represent this in Boolean Algebra, I can say that:

* **x** represents *if finish work early*.
* **y** represents *if the traffic is good*.
* **z** represents *if I get home early*.

**x OR y = z**

Here is the representation in a truth table:

|  |  |  |
| --- | --- | --- |
| **X** | **Y** | **Result** |
| False | False | False |
| True | False | True |
| False | True | True |
| True | True | True |

1. **Not; negation or disjunction**

**Not** has the effect of changing the value of a variable to the opposite. For example, I can say: \_“If I am not full, I will eat a cake.” To represent this in Boolean algebra, I will write:

* **d** represents *if I am full*
* **e** represents *if I eat a cake*
* the variable **d** currently has a value of **True** then
* the expression **not d** has a result of **False**

And as a truth table:

|  |  |
| --- | --- |
| X | Result |
| True | False |
| False | True |

* outside: exit
* procedure: process
* finished: end
* early: start
* cake: pie

**Worksheet 7.3**

**Fill out the following self-evaluation**

1. Entiendo cómo puedo tratar de entender el significado de las nuevas palabras sin consultar el diccionario.  
   Si ☺ No ☹ Tal vez :|
2. La estrategia de “inferring” me ayuda a entender el texto que leo mejor.  
   Si ☺ No ☹ Tal vez :|
3. Pude entender qué es Boolean Algebra.  
   Si ☺ No ☹ Tal vez :|