**Excel Functions**

**1. Basic Functions**

* **SUM:** Adds numbers.  
  =SUM(A1:A5)  
  *Example:* Calculate the total marks of students.
* **AVERAGE:** Finds the mean.  
  =AVERAGE(B1:B5)  
  *Example:* Find the average sales for a week.
* **MAX/MIN:** Finds the highest/lowest value.  
  =MAX(C1:C5)  
  =MIN(C1:C5)  
  *Example:* Determine the highest and lowest scores in a class.

**2. Logical Functions**

* **IF:** Returns different values based on a condition.  
  =IF(A1>50, "Pass", "Fail")  
  *Example:* Determine if a student has passed or failed.
* **AND:** Checks if all conditions are true.  
  =AND(A1>50, B1>30)  
  *Example:* Verify if a student has passed in both subjects.
* **OR:** Checks if at least one condition is true.  
  =OR(A1>50, B1>30)  
  *Example:* Check if a student has passed in at least one subject.

**3. Text Functions**

* **CONCATENATE (or CONCAT in newer versions):** Combines text strings.  
  =CONCAT(A1, " ", B1)  
  *Example:* Combine first and last names.
* **LEFT/RIGHT/MID:** Extracts specific parts of text.
  + =LEFT(A1, 3) extracts the first 3 characters.
  + =RIGHT(A1, 4) extracts the last 4 characters.
  + =MID(A1, 2, 3) extracts 3 characters starting from the 2nd.
* **LEN:** Counts the number of characters in a text.  
  =LEN(A1)  
  *Example:* Count characters in a name.

**4. Lookup Functions**

* **VLOOKUP:** Searches for a value in the first column and returns a value in the same row.  
  =VLOOKUP(lookup\_value, table\_array, col\_index\_num, range\_lookup)  
  *Example:* Search for a student ID and retrieve their marks.
* **HLOOKUP:** Similar to VLOOKUP but works horizontally.  
  =HLOOKUP(lookup\_value, table\_array, row\_index\_num, range\_lookup)
* **INDEX:** Returns the value of a cell in a table based on row and column numbers.  
  =INDEX(array, row\_num, column\_num)  
  *Example:* Retrieve the value at a specific row and column.
* **MATCH:** Returns the position of a value in a row or column.  
  =MATCH(lookup\_value, lookup\_array, match\_type)

**5. Date and Time Functions**

* **TODAY:** Returns the current date.  
  =TODAY()
* **NOW:** Returns the current date and time.  
  =NOW()
* **DATEDIF:** Calculates the difference between two dates.  
  =DATEDIF(start\_date, end\_date, "Y")  
  *Example:* Calculate age or project duration