📊 Advanced Excel Cheat Sheet

📌 Logical Functions

✓ IF – Returns one value if a condition is TRUE and another if FALSE

- Usage: Used to apply conditions, such as pass/fail, discount eligibility, etc.
- Example: =IF(A1>50, "Pass", "Fail") → If A1 is greater than 50, returns "Pass", otherwise "Fail".

✓ IFS – Returns different values based on multiple conditions

- Usage: Used to assign multiple conditions, such as grading students or categorizing values.
- Example: =IFS(A1>90, "A", A1>80, "B", A1>70, "C", TRUE, "Fail") → Returns "A" if A1 > 90, "B" if A1 > 80, etc.

✓ AND – Returns TRUE if all conditions are met, otherwise FALSE

- Usage: Used to check if multiple conditions are met, such as loan eligibility.
- Example: =AND(A1>50, B1<100) → Returns TRUE if A1 > 50 and B1 < 100.

✓ OR – Returns TRUE if at least one condition is met

- Usage: Used when only one condition needs to be satisfied, such as a bonus condition.
- Example: =OR(A1>50, B1>100) → Returns TRUE if either condition is met.

📌 Lookup & Reference Functions

✓ VLOOKUP – Searches for a value in a column and returns a value from another column

- Usage: Used to fetch data, such as retrieving employee salaries or product prices.
- Example: =VLOOKUP(101, A2:C10, 2, FALSE) → Finds 101 in column A and returns the value from the 2nd column.

✓ HLOOKUP – Searches for a value in a row and returns a value from another row

- Usage: Used when data is structured in rows instead of columns.
- Example: =HLOOKUP("Product", A1:E3, 2, FALSE) → Finds "Product" in row 1 and returns the value from row 2.

✓ XLOOKUP – Searches for a value in a column and returns a corresponding value from another column (modern replacement for VLOOKUP)

- Usage: Used for advanced lookups with missing values handled better than VLOOKUP.
- Example: =XLOOKUP(101, A2:A10, B2:B10, "Not Found") → Searches for 101 in column A and returns the corresponding value from column B.

✓ INDEX – Returns the value of a cell based on row and column numbers

- Usage: Used to fetch data dynamically when row and column numbers are known.
- Example: =INDEX(A2:C5, 2, 3) → Returns the value at row 2, column 3 of the range.

✓ MATCH – Returns the position of a value in a row or column

- Usage: Used to determine the rank or position of a value in a list.
- Example: =MATCH(50, A2:A10, 0) → Finds 50 in A2:A10 and returns its position.

✓ OFFSET – Returns a reference shifted by a number of rows and columns

- Usage: Used to create dynamic ranges in dashboards and reports.
- Example: =OFFSET(A1, 2, 1) → Returns the value 2 rows down and 1 column right of A1.

📌 Text Functions

✓ LEFT – Extracts a specific number of characters from the left side of text

- Usage: Used for extracting area codes, first names, etc.
- Example: =LEFT("Excel", 2) → Returns "Ex".

✓ RIGHT – Extracts a specific number of characters from the right side of text

- Usage: Used to extract suffixes, last names, etc.
- Example: =RIGHT("Excel", 2) → Returns "el".

✓ MID – Extracts characters from a specific position in text

- Usage: Used to extract middle values from a string, such as extracting part of an ID.
- Example: =MID("Advanced Excel", 3, 5) → Returns "vance".

✓ LEN – Returns the number of characters in text

- Usage: Used for validating text length, such as checking if passwords meet character requirements.
- Example: =LEN("Excel") → Returns 5.

📌 Date & Time Functions

✓ TODAY – Returns the current date

- Usage: Used in reports and automated schedules.
- Example: =TODAY() → Returns today's date.

✓ NOW – Returns the current date and time

- Usage: Used in timestamps and real-time data tracking.
- Example: =NOW() → Returns the current date and time.

✓ DATEDIF – Returns the difference between two dates in years, months, or days

- Usage: Used for calculating age, service tenure, etc.
- Example: =DATEDIF(A1, B1, "Y") → Returns the number of years between A1 and B1.

📌 Error Handling Functions

✓ IFERROR – Returns a specified value if a formula results in an error

- Usage: Used to handle errors in calculations, such as division by zero.
- Example: =IFERROR(A1/B1, "Error!") → If B1 is 0, returns "Error!".

✓ IFNA – Returns a specified value if a formula results in a #N/A error

- Usage: Used to handle #N/A errors in lookup functions, such as when a value is not found in a dataset.
- Example: =IFNA(VLOOKUP(105, A2:B10, 2, FALSE), "Not Found") → If 105 is not found in column A, returns "Not Found".

📌 Mathematical Functions

✓ ROUND – Rounds a number to a specified number of decimal places

- Usage: Used in financial and statistical calculations where decimal precision is needed.
- Example: =ROUND(3.14159, 2) → Returns 3.14.

✓ MROUND – Rounds a number to the nearest specified multiple

- Usage: Used when rounding to the nearest interval, such as nearest 5, 10, or 100.
- Example: =MROUND(23, 5) → Returns 25.

✓ CEILING – Rounds a number up to the nearest specified multiple

- Usage: Used in pricing, inventory calculations, and time scheduling where rounding up is necessary.
- Example: =CEILING(23, 5) → Returns 25.

✓ FLOOR – Rounds a number down to the nearest specified multiple

- Usage: Used in calculations where values should not exceed a certain threshold.
- Example: =FLOOR(23, 5) → Returns 20.

✓ MOD – Returns the remainder after division

- Usage: Used for determining divisibility, identifying odd/even numbers, and cyclic patterns.
- Example: =MOD(10, 3) → Returns 1 (since 10 ÷ 3 = 3 remainder 1).

📌 Statistical Functions

✓ LARGE – Returns the nth largest value in a dataset

- Usage: Used to find top-performing sales, highest marks, etc.
- Example: =LARGE(A1:A10, 2) → Returns the 2nd largest value.

✓ SMALL – Returns the nth smallest value in a dataset

- Usage: Used to find the lowest values, such as the cheapest product.
- Example: =SMALL(A1:A10, 3) → Returns the 3rd smallest value.

✓ MEDIAN – Returns the middle value in a dataset

- Usage: Used in statistics to find the central tendency.
- Example: =MEDIAN(A1:A10) → Returns the median value.

✓ MODE – Returns the most frequently occurring number

- Usage: Used to find the most common values in a dataset.
- Example: =MODE(A1:A10) → Returns the most common number in the range.

✓ FACT – Returns the factorial of a number

- Usage: Used in probability and statistics calculations.
- Example: =FACT(5) → Returns 120.

✓ COMBIN – Returns the number of ways to choose k items from n without repetition

- Usage: Used in statistical probability.
- Example: =COMBIN(10, 3) → Returns 120.

✓ COMBINA – Returns the number of ways to choose k items from n with repetition

- Usage: Used when order does not matter, but repetition is allowed.
- Example: =COMBINA(10, 3) → Returns 220.