



## Functions in Excel

This lecture explains some important mathematical and statistical functions used in **Microsoft Excel**. These functions help users perform calculations quickly and efficiently in spreadsheets.

### Lecture Objectives

- Understand the concept of **functions in Excel**.
- Learn how to use common mathematical functions.
- Apply functions to solve numerical problems in worksheets.
- Analyze data using statistical functions.

#### 1- ABS Function (Absolute Value) $|x|$

##### Definition

The **ABS** function returns the **absolute value of a number**, which means it removes the negative sign and gives the positive value.

**Syntax**            =ABS(number)

##### Example

Number	Formula	Result
-12	=ABS(-12)	12
8	=ABS(8)	8

##### Uses

- Converting negative numbers to positive.
- Useful in financial and engineering calculations.



## 2- INT Function (Integer)

### Definition

The **INT** function rounds a number **down to the nearest integer (whole number)**.

**Syntax**      =INT(number)

### Example

Number	Formula	Result
7.8	=INT(7.8)	7
-3.4	=INT(-3.4)	-4

### Uses

- Removing decimal values.
- Working with whole numbers in calculations.

## 3- VAR Function (Variance)

### Definition

The **VAR** function calculates the **variance of a set of numbers**, which measures how far the numbers are spread out from the average.

**Syntax :**      =VAR(number1, number2, ...)

### Example



Values
5
7
9
11

Formula: =VAR(A1:A4)

### Uses

- Statistical analysis.
- Measuring variability in data sets.

## 4- SIGN Function

### Definition

The **SIGN** function determines the **sign of a number** (positive, negative, or zero).

**Syntax** =SIGN(number)

### Results

Number Type	Result
Positive number	1
Zero	0
Negative number	-1



### Example

Number	Formula	Result
-9	=SIGN(-9)	-1
0	=SIGN(0)	0
15	=SIGN(15)	1

### Uses

- Identifying positive and negative numbers in datasets.
- Conditional calculations and logical operations.

### Practical Example for Students

A (Number)	B (ABS)	C (INT)	D (SIGN)
-6.5	=ABS(A2)	=INT(A2)	=SIGN(A2)

### Result:

Number	ABS	INT	SIGN
-6.5	6.5	-7	-1

### 5- MOD Function (Remainder of Division)

#### Definition

The **MOD** function returns the **remainder after dividing one number by another**.



**Syntax**    =MOD(number, divisor)

### Example



Operation	Formula	Result
10 ÷ 3	=MOD(10,3)	1
15 ÷ 4	=MOD(15,4)	3

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### COUNT Function

#### Definition

The **COUNT** function is used to **count the number of cells that contain numeric values** in a selected range.

**Syntax**    =COUNT(value1, value2, ...)

#### Example

Data
10
25
Ahmad
40

Formula:    =COUNT(A1:A4)

Result: **3**

Because the function counts only **numbers**, not text.



## Uses

- Counting numeric data in a worksheet.
- Useful in statistical analysis and reports.

## 7- COUNTBLANK Function

### Definition

The **COUNTBLANK** function counts the **number of empty cells** within a specified range.

**Syntax** =COUNTBLANK(range)

### Example

Data
15
(blank)
22
(blank)

Formula: =COUNTBLANK(A1:A4)

Result: 2

### Uses

- Checking missing data in worksheets.
- Finding incomplete records.



## Conclusion

In this lecture we learned several important Excel functions:

- **ABS** → Returns the absolute value of a number.
- **INT** → Rounds a number down to the nearest integer.
- **VAR** → Calculates the variance of a dataset.
- **SIGN** → Determines whether a number is positive, negative, or zero.
- **MOD** → Returns the remainder of division.
- **COUNT** → Counts cells that contain numbers.
- **COUNTBLANK** → Counts empty cells.

These functions are very useful for **data analysis, mathematical calculations, and statistical operations in Excel.**

## Question\

No	Question (English)	Answer (English)
1	What does the ABS function do?	Returns the absolute value of a number.
2	Write the syntax of the INT function.	=INT(number)
3	What is the purpose of the VAR function?	Calculates variance of a data set.
4	What does SIGN return for a positive number?	It returns 1.
5	What does the MOD function calculate?	It calculates the remainder of division.
6	What is the difference between COUNT and COUNTBLANK?	COUNT counts numbers, COUNTBLANK counts empty cells.



No	Question (English)	Options	Answer
1	Which function returns the absolute value of a number?	A) INT B) ABS C) SIGN D) VAR	<b>B – ABS</b>
2	The INT function returns:	A) Decimal number B) Integer less than or equal to the number C) Remainder D) Average	<b>B</b>
3	What is the result of =SIGN(-5)?	A) 1 B) -1 C) 0 D) 5	<b>B – -1</b>
4	The VAR function is used to calculate:	A) Average B) Variance C) Sum D) Count	<b>B – Variance</b>
5	The MOD function returns:	A) Average B) Remainder of division C) Absolute value D) Integer	<b>B</b>
6	COUNT function counts:	A) Text cells B) Blank cells C) Numeric cells D) All cells	<b>C</b>
7	COUNTBLANK function counts:	A) Numbers B) Empty cells C) Text D) Formulas	<b>B</b>

Good Luck .....