EXCEL STATISTICAL FORMULAS

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1. SAMPLE SIZE (n)

Definition

Sample size is the **total number of observations (data points)** in a dataset.

Excel Function

=COUNT(A1:A100) → counts numeric values
=COUNTA(A1:A100) → counts numeric + text values

Example

Data: 45, 60, 75, 80, 100 } Sample Size = 5

Interpretation

• Larger sample size = more reliable analysis
• Smaller sample size = less reliable

2. AVERAGE (MEAN)

Definition

Average is the **sum of all values divided by total number of values**.

Excel Function

=AVERAGE(A1:A18)

Example

Values: 10, 20, 30

Average = (10+20+30)/3 = 20

Interpretation

Shows the **central value** of the dataset.

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3. MEDIAN

Definition

Median is the **middle value** when data is arranged in ascending order.

Excel Function

=MEDIAN(A1:A18)

Example

Data: 10, 20, 30, 40, 50
Median = 30

If even numbers:
Data: 10, 20, 30, 40
Median = (20+30)/2 = 25

Interpretation

Median is useful when data has **outliers**.

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4. MODE

Definition

Mode is the **most frequently occurring value**.

Excel Function

=MODE(A1:A18)

Example

Data: 10, 20, 20, 30, 40 } Mode = 20

Interpretation

Shows the **most common value**

5. MAX (Maximum)

Definition

Maximum is the **largest value** in dataset.

Excel Function

=MAX(A1:A18)

Example

Data: 10, 50, 100, 30
Max = 100

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6. MIN (Minimum)

Definition

Minimum is the **smallest value**.

Excel Function

=MIN(A1:A18)

Example

Data: 10, 50, 100
Min = 10

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7. PERCENTILE

Definition

Percentile shows the **value below which a percentage of data falls**

25th Percentile (Q1)

25% values fall below this point

Excel:

=PERCENTILE(A1:A18,0.25)

75th Percentile (Q3)

75% values fall below this point

Excel:

=PERCENTILE(A1:A18,0.75)

Interpretation Example

25th percentile = 50
Means 25% students scored below 50

75th percentile = 85
Means 75% students scored below 85

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8. STANDARD DEVIATION

Definition

Standard deviation measures **how spread out the data is from the average**

Excel Function

=STDEV(A1:A18)

Interpretation

Low Std Dev → Data close to average
High Std Dev → Data widely spread

Example:

Average = 70
Std Dev = 5 → consistent data
Std Dev = 25 → inconsistent data

Your value:
25.77 → moderate variation

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9. VARIANCE

Definition

Variance is the **square of standard deviation**

Excel Function

=VAR(A1:A18)

Your Example

Std Dev = 25.77
Variance = 664.14

Summary Table

Measure	Purpose	Excel Function
Sample Size	Count values	COUNT
Average	Central value	AVERAGE
Median	Middle value	MEDIAN
Mode	Most frequent value	MODE
Maximum	Largest value	MAX
Minimum	Smallest value	MIN
Percentile	Distribution	PERCENTILE
Std Deviation	Spread of data	STDEV
Variance	Spread squared	VAR

Real-life Example (Student Marks)

Average → class performance
Median → typical student
Mode → most common marks
Std Dev → consistency
Percentile → ranking