CHAPTER 1

# Introduction to Statistics for Economics

CBSE Class 11 · Economics (Statistics, Part A) · Chapter 1

CBSE · Economics · Class 11

## WHAT THIS CHAPTER DOES

**A** Explain why economics needs statistics.

**B** Define statistics in BOTH the singular and plural sense.

Boards prep that builds confidence, not anxiety.

TODAY'S MISSION

# Today's mission

1. Explain why economics needs statistics.
2. Define statistics in BOTH the singular and plural sense.
3. List the functions, scope and limitations of statistics.
4. Score full marks on the definition + functions + limitations questions.

WHY THIS MATTERS

# Why this chapter matters

1. It is the first chapter of Class 11 Economics — sets the foundation for the whole Statistics paper.
2. Definition-heavy and easy to score: clean wording = full marks.
3. Real-world link: every 'GDP', 'inflation', 'literacy rate' figure in the news IS statistics in action.

TOPIC

A

# Why Economics needs Statistics

THEOREM · LOAD-BEARING RESULT

# Economics, scarcity and the need for data

> Economics studies how people use LIMITED resources to satisfy UNLIMITED wants — the problem of SCARCITY, which forces CHOICE. To study these choices objectively, economists need quantitative information, i.e., statistics.

## STATEMENT

An economy is built on three economic activities — CONSUMPTION (using goods/services to satisfy wants), PRODUCTION (creating goods/services) and DISTRIBUTION (sharing

## WHY THIS MATTERS

- Without numbers, economics would remain vague
- Statistics gives CONCRETE numbers to qualitative statements ('prices are rising' becomes 'inflation is 5.1%'), making economic reasoning precise, comparable and testable.

## WATCH OUT FOR

**NOTE** Don't confuse the SUBJECT (economics) with its TOOL (statistics). Statistics is a method economics borrows; it is not economics itself.

TOPIC

# The three economic activities

## CONSUMPTION

Consumption is the act of using up goods and services to satisfy human wants — eating food, wearing clothes, using a smartphone, taking a bus ride. It is the starting point and ultimate aim of all economic activity, because production and distribution exist to make consumption possible. Statistics measures

## PRODUCTION

Production is the creation of goods and services to satisfy human wants — a farmer growing wheat, a factory assembling cars, a teacher providing education. It transforms inputs (the factors of production — land, labour, capital, enterprise) into output. Statistics measures

## DISTRIBUTION

Distribution is the sharing of the total output (or the income generated by producing it) among the people and the factors of production — wages to labour, rent to land, interest to capital, profit to enterprise. It answers the 'for whom' question of an economy. Statistics measures distribution through data on income

## SCARCITY & CHOICE

Underlying all three activities is the central economic problem: wants are UNLIMITED but the resources to satisfy them are LIMITED, so every individual and economy is forced to CHOOSE. Choosing more of one thing means giving up something else (opportunity cost). Economics is essentially

TOPIC

# B

# What is Statistics? Two senses

THEOREM · LOAD-BEARING RESULT

# Statistics — singular and plural sense

> The word 'statistics' has TWO meanings. In the SINGULAR sense it is a SCIENCE/METHOD — the techniques of dealing with numerical data. In the PLURAL sense it is the DATA itself — the quantitative facts collected for a purpose.

## STATEMENT

SINGULAR sense: statistics is the science of COLLECTING, ORGANISING, PRESENTING, ANALYSING and INTERPRETING numerical data. PLURAL sense: statistics means the aggregates of

## WHY THIS MATTERS

- Both senses appear in everyday and exam language
- Distinguishing them is the single most-tested idea of this chapter and the easiest mark to win or lose.

## WATCH OUT FOR

**NOTE** A SINGLE figure is NOT statistics (plural sense) — 'one person earns ₹40,000' is just a number. Statistics requires a SET of comparable figures collected for a purpose. And never reduce the singular sense to 'just numbers' — it is the whole METHOD.

WORKED EXAMPLE

# Singular or plural sense?

1. 'India's literacy statistics improved after 2011' ⇒ PLURAL sense (refers to the DATA/figures).
2. 'Statistics is used to analyse survey results' ⇒ SINGULAR sense (refers to the METHOD/science).
3. 'The statistics of road accidents are alarming' ⇒ PLURAL (the figures).
4. 'A statistician applies statistics to forecast demand' ⇒ SINGULAR (the science/method).
5. Rule of thumb: if you can replace it with 'the data', it is PLURAL; if with 'the science/method', it is SINGULAR.

TOPIC

C

# Functions of Statistics

TOPIC

# What statistics does

### PRESENTS FACTS IN DEFINITE FORM

The first function of statistics is to present facts in a DEFINITE, NUMERICAL and precise form. A vague qualitative statement carries little conviction — 'the country is making progress' means little, but 'literacy rose from 74% to 78% in five years' is concrete and persuasive. Numbers

### SIMPLIFIES & CONDENSES DATA

Raw data is usually a huge, unreadable mass of figures. The second function of statistics is to SIMPLIFY and CONDENSE this mass into a few representative figures — averages, percentages, ratios and index numbers — that the human mind can actually grasp and

### ENABLES COMPARISON

The third function is to facilitate COMPARISON. By reducing facts to numbers, statistics lets us compare across TIME (this year's GDP versus last year's), across PLACE (one state's literacy versus another's) and across GROUPS (urban versus rural incomes). Comparison is impossible with vague

### FORECASTING & POLICY

The fourth function is to enable FORECASTING and to guide POLICY. Past statistical data reveal trends that can be projected into the future — predicting next year's demand, rainfall or revenue — and governments and firms use these projections to PLAN. Statistics also helps frame and TEST

TOPIC

D

# Importance & Scope in Economics

THEOREM · LOAD-BEARING RESULT

# Why economics relies on statistics

> "Statistics is indispensable to economics: it gives concrete numbers to qualitative statements, enables comparison, supports forecasting, underpins policy-making, and allows economic theories to be tested with real data.

## STATEMENT

SCOPE in economics: (1) measuring economic variables — national income, inflation, unemployment, poverty; (2) comparing performance across years and regions; (3) forecasting future trends; (4)

## WHY THIS MATTERS

- Economic problems — scarcity, growth, inequality — are inherently about MAGNITUDES
- Only statistics can supply those magnitudes, making economics precise, predictive and policy-relevant.

## WATCH OUT FOR

**NOTE** 'Importance' and 'scope' overlap heavily. In a 4-mark answer, give DISTINCT points (measure, compare, forecast, policy, test theory) rather than restating the same idea in different words.

TOPIC

E

# Limitations & Distrust of Statistics

TOPIC

# Limitations of statistics

### STUDIES AGGREGATES ONLY

Statistics studies GROUPS and AGGREGATES, not single individuals. Its conclusions are true ON AN AVERAGE and need not hold for any particular unit — the statement 'average income is ₹50,000' may not describe a single real person, since some earn

### QUANTITATIVE FACTS ONLY

Statistics studies only QUANTITATIVE facts — characteristics that can be expressed in numbers. QUALITATIVE characteristics such as honesty, intelligence, beauty or kindness cannot be studied directly because they cannot be measured numerically, unless they

### RESULTS ARE AVERAGES

Because statistical results are AVERAGES and ESTIMATES rather than exact individual truths, they can be misleading if read carelessly. An average hides the spread of the data: two villages with the same average income can have very different inequality. Statistics can also be affected by

### CAN BE MISUSED

Statistics can be MISUSED — knowingly or unknowingly. The same set of figures, if selectively chosen, wrongly compared or deliberately distorted, can be made to support opposite conclusions; hence the famous remark 'there are lies, damned lies and statistics'. This is the

WORKED EXAMPLE

# Why people distrust statistics

1. Claim 1: 'Average company salary is ₹10 lakh' — true, but one director earns ₹2 crore and 50 workers earn ₹2 lakh; the average misleads.
2. Claim 2: A graph with a chopped y-axis exaggerates a tiny rise into a 'dramatic surge'.
3. Claim 3: Quoting a percentage without the base ('sales up 100%!') hides that sales went from 2 units to 4.
4. Lesson: in every case the DATA is fine — the MISUSE/misinterpretation creates the distrust.
5. Exam line: 'Statistics are like clay — they can be moulded either way; the fault is with the user, not the science.'

TRY IT · SOLVE BEFORE YOU PEEK

# Quick self-test (60 seconds)

Work it out before you flip the answer.

**SOLUTION**

1. Q1. State the singular and plural sense of statistics in one line each.
2. Q2. Name the three economic activities and give one example of each.
3. Q3. List any four functions of statistics.
4. Q4. Give two limitations of statistics and explain the 'distrust of statistics'.
5. Cover the slide and answer aloud before checking the Recap below.

TOPIC

# What statistics means

**TRAP → TRUTH**

× **MISTAKE** Statistics is just a set of numbers / data.

✓ **CORRECT** Statistics is NOT merely numbers. In the SINGULAR sense statistics is a SCIENCE and a METHOD — the techniques of collecting, organising, presenting, analysing and interpreting numerical data. The 'just numbers' view captures only the plural sense (the data itself) and misses the whole methodological discipline.

TOPIC

# Singular vs plural sense

**TRAP → TRUTH**

× **MISTAKE** Both senses of statistics mean the same thing.

✓ **CORRECT** STATISTICS (singular) = the method/science of handling data. STATISTICS (plural) = the quantitative facts/data themselves (e.g., India's literacy statistics). They are two distinct uses of the same word — confusing them is the single most common –1 in this chapter.

TOPIC

# What statistics studies

**TRAP → TRUTH**

× **MISTAKE** Statistics studies and describes individual units.

✓ **CORRECT** Statistics studies AGGREGATES, not individuals. A single number (one person's income) is not statistics; a SET of figures that can be compared (incomes of 1000 households) is. Statistics gives results that are true on an AVERAGE, not for every individual case.

TOPIC

# Qualitative vs quantitative

**TRAP → TRUTH**

× **MISTAKE** Statistics can measure anything, including honesty or beauty.

✓ **CORRECT** Statistics studies ONLY QUANTITATIVE facts — things expressed in numbers. Qualitative characteristics (honesty, intelligence, beauty) cannot be studied directly unless converted into a numerical measure (e.g., an honesty SCORE). This is a key LIMITATION of statistics.

TOPIC

# Reliability of statistics

**TRAP → TRUTH**

× **MISTAKE** Statistics always tells the absolute truth.

✓ **CORRECT** Statistics is true only ON AN AVERAGE and can be MISUSED. The same data, selectively presented, can support opposite conclusions ('lies, damned lies and statistics'). This explains the 'DISTRUST of statistics' — the fault lies with misuse by people, not with the science itself.

TOPIC

# Statistics and economics

**TRAP → TRUTH**

× **MISTAKE** Economics is a purely theoretical subject with no need for statistics.

✓ **CORRECT** Economics relies HEAVILY on statistics. Statistics turns vague qualitative statements ('prices are rising') into precise quantitative ones ('inflation is 5.1%'), enables COMPARISON across time and regions, supports FORECASTING, and underpins POLICY. Modern economics is largely empirical.

TOPIC

# Economic activities

**TRAP → TRUTH**

× **MISTAKE** Only buying goods (consumption) is an economic activity.

✓ **CORRECT** There are THREE economic activities: CONSUMPTION (using goods/services to satisfy wants), PRODUCTION (creating goods/services), and DISTRIBUTION (sharing the income/output among factors and people). Statistics provides data on all three.

TOPPER TEMPLATE · MARK-BY-MARK

# 3-mark: 'Define statistics in the singular and plural sense.'

| | | |
|---|---|---|
| 1 | **SINGULAR SENSE** 1 m | In the SINGULAR sense, statistics is the SCIENCE and METHOD of dealing with numerical data — that is, the techniques of COLLECTING, ORGANISING, PRESENTING, ANALYSING and INTERPRETING data. Here statistics refers to a body of methods, not the data itself. |
| 2 | **PLURAL SENSE** 1 m | In the PLURAL sense, statistics means the QUANTITATIVE FACTS or DATA themselves — the numerical figures collected for a definite purpose, e.g., 'the statistics of India's population', 'employment statistics'. Here statistics = aggregates of numbers. |
| 3 | **ONE-LINE CONTRAST + EXAMPLE** 1 m | Thus the same word has two uses: singular = the method/science; plural = the data. Example: 'Statistics (singular) is used to analyse the unemployment statistics (plural) of India.' |

TOPPER TEMPLATE · MARK-BY-MARK

# 4-mark: 'Explain any four functions of statistics.'

| | | |
|---|---|---|
| 1 | **PRESENTS FACTS IN DEFINITE FORM** 1 m | Statistics presents facts in a DEFINITE, NUMERICAL form. A vague statement like 'prices are rising' becomes precise — 'prices rose by 5.1% this year'. Numbers carry more conviction than words. |
| 2 | **SIMPLIFIES AND CONDENSES DATA** 1 m | Statistics SIMPLIFIES and CONDENSES a mass of data into a few representative figures (averages, percentages, indices) that the human mind can grasp. A single average summarises thousands of observations. |
| 3 | **ENABLES COMPARISON** 1 m | Statistics facilitates COMPARISON across time, place and groups — e.g., comparing this year's GDP with last year's, or one state's literacy with another's. Comparison is impossible without quantified facts. |
| 4 | **HELPS FORECASTING + POLICY** 1 m | Statistics enables FORECASTING of future trends and the FORMULATION of policies. Governments and firms use statistical data to plan output, budgets and welfare schemes. (Also acceptable: 'helps in formulating and testing economic laws/relationships'.) |

TOPPER TEMPLATE · MARK-BY-MARK

# 3-mark: 'State any three limitations of statistics.'

| | | |
|---|---|---|
| 1 | **STUDIES AGGREGATES, NOT INDIVIDUALS** 1 m | Statistics studies only AGGREGATES and is true on an AVERAGE — it does not describe a single individual unit. The statement 'average income is ₹50,000' need not be true for any one person. |
| 2 | **QUANTITATIVE ONLY** 1 m | Statistics studies only QUANTITATIVE facts. Qualitative characteristics like honesty, intelligence or beauty cannot be studied unless first converted into numbers, so much of human behaviour lies outside its direct reach. |
| 3 | **CAN BE MISUSED** 1 m | Statistics can be MISUSED. The same figures, selectively chosen or wrongly interpreted, can support opposite conclusions — hence the saying 'figures can lie'. This is the basis of the 'distrust of statistics'; the fault is in misuse, not the science. |

PYQ PATTERNS

# Top PYQ patterns to drill

| | | |
|---|---|---|
| #1 | Define statistics in the singular and plural sense. (3 marks) | Most school papers + SQP |
| #2 | Explain any four functions of statistics. (3-4 marks) | Annual |
| #3 | State the importance / scope of statistics in economics. (4 marks) | Annual |
| #4 | Explain the limitations of statistics. (3-4 marks) | Frequent |
| #5 | What are the three economic activities? Briefly explain. (3 marks) | Unit tests |

RECAP · MEMORISE THESE

# Recap

**1** Two senses — Singular = the SCIENCE/method (collect-organise-present-analyse-interpret). Plural = the DATA/quantitative facts themselves.

**2** Why economics needs it — Gives numbers to qualitative statements; enables comparison, forecasting, policy and theory-testing. Three economic activities: consumption, production, distribution.

**3** Functions & limits — Functions: definite form, condense, compare, forecast/ policy. Limits: aggregates not individuals, quantitative only, true on average, can be misused (distrust).

WHAT'S NEXT

# What's next

→ Chapter 2 — Collection of Data (primary vs secondary, census vs sample, NSSO).

→ Sit the 15-MCQ Quick Drill below.

→ Then attempt the full School-Pattern Paper — 30 marks.

# You've mastered the foundation of statistics for economics.

Singular vs plural, functions, scope and limits — now prove it.

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Boards prep that builds confidence, not anxiety.