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CUET · ECONOMICS · CLASS XI · CODE 309

Introduction

CUET unit: Statistics for Economics

By **UniDrill** · NCERT-grounded study material

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📌 Snapshot

- Economics is the **"study of man in the ordinary business of life"** (Alfred Marshall); Statistics is the study of numbers relating to selected facts in a systematic form. The two are linked.
- The agents of economic activity are the **consumer, seller, producer, employee and employer**; the three conventional branches of Economics are **consumption, production and distribution**.
- **Scarcity** (limited resources with alternative uses against unlimited wants) is the root of all economic problems, making **choice** central to Economics.
- Statistics serves Economics by **collecting, presenting, analysing and interpreting** economic data — both quantitative and qualitative — to support policy formulation.
- High CUET weight as a foundational chapter: definitions, distinctions (quantitative vs qualitative data, consumer vs producer, consumption vs production vs distribution) and the scope/functions/limitations of Statistics are repeatedly tested.
- The four-step statistical workflow runs: collection → presentation → summarisation → analysis & interpretation.

📖 Detailed Notes

2.1 Core concepts

- **Marshall's definition**: Alfred Marshall described Economics as "the study of man in the ordinary business of life" (NCERT §1, p. 1). Statistics is the toolkit through which economists study "ordinary business" empirically.
- A **consumer** buys goods to satisfy personal, family or gift-giving needs; a **seller** sells goods for profit (e.g. a shopkeeper) (NCERT §1, p. 1). The consumer-seller pair is the first economic transaction.
- A **producer** produces goods (farmer, manufacturer) or provides services (doctor, porter, taxi driver, transporter); an **employee** works for another for wages/salary; an **employer** employs others for a wage (NCERT §1, pp. 1–2). Producers can be of goods or services — a critical clarification the NCERT makes early.

- All these roles place a person in **gainful employment** in an **economic activity** — activities undertaken for monetary gain — which is what economists mean by the "ordinary business of life" (NCERT §1, p. 2). Non-monetary activities like leisure are not "economic" in this strict sense.
- The **Aladdin analogy** illustrates that in real life, unlimited wants meet limited resources (e.g., limited pocket money forces choice among wants) — this is the basic teaching of Economics (NCERT §1, p. 2). Unlike Aladdin's lamp, no genie grants infinite wishes; every wish has an opportunity cost.
- **Scarcity is the root of all economic problems** — long queues at railway counters, crowded buses and trains, shortages of essential commodities, and the rush for film tickets are all manifestations of scarcity (NCERT §1, p. 2). Without scarcity, there would be no economic problem.
- Producers' resources are **limited** and also have **alternative uses** — agricultural land, labour, water and fertiliser can produce food crops or non-food crops like rubber, cotton and jute — giving rise to the **problem of choice** between commodities (NCERT §1, p. 3). Choice is therefore unavoidable for both consumers and producers.
- Economics is conventionally discussed in three parts:
- **Consumption** — how a consumer chooses what to buy given income and prices.
- **Production** — how a producer chooses what and how to produce for the market.
- **Distribution** — how national income / GDP is distributed through wages, salaries, profits and interest (NCERT §1, p. 3). "Distribution" here means income distribution, not the physical movement of goods.
- Modern economics extends beyond these three to special studies — poverty, income disparity, illiteracy, education-and-jobs linkages, and disaster impact (tsunami, earthquakes, bird flu) — which require numerical facts (NCERT §1, pp. 3–4).
- **Working definition** the NCERT settles on (Lionel Robbins-style scarcity definition): "Economics is the study of how people and society choose to employ scarce resources that could have alternative uses in order to produce various commodities that satisfy their wants and to distribute them for consumption among various persons and groups in society." (NCERT §1, p. 4).
- **Economic facts** (also called **economic data**) are collected to **analyse** problems (e.g. poverty in terms of unemployment, low productivity, backward technology) and to formulate **policies** to solve them (NCERT §2, p. 4). The distinction between "analysing" and "solving" is crucial — Statistics analyses; policies solve.
- **Statistics** deals with the collection, analysis, interpretation and presentation of numerical data; it is a branch of mathematics also used in accounting, economics, management, physics, finance, psychology and sociology (NCERT §3, p. 5). Statistics is not confined to Economics.

- **Quantitative data** — measurable in numbers (e.g., rice production in India rose from 39.58 million tonnes in 1974–75 to 106.5 million tonnes in 2013–14). **Qualitative data** — describe attributes that cannot be measured in numbers (e.g. gender, health status, skill levels expressed in degrees: better/worse, sick/healthy, unskilled/skilled/highly skilled) (NCERT §3, p. 5). Both kinds of data fall within the scope of Statistics.
- **The statistical process** has four sequential steps: **collection** → **presentation** (tabular, diagrammatic, graphic) → **summarisation** through numerical indices (mean, variance, standard deviation) → **analysis and interpretation** (NCERT §3, p. 5). This four-step pipeline previews kest102–kest108.
- **Five functions of Statistics**:
- (a) presents facts in **precise and definite form** (e.g., "310 people died" vs vague "hundreds died"),
- (b) **condenses mass data** into summary measures like averages,
- (c) finds **relationships** between economic variables (price–demand, income–consumption, government expenditure–price level),
- (d) helps **predict** changes (e.g., impact of today's investment on future national income),
- (e) aids **plan/policy formulation** based on forecast trends (NCERT §4, pp. 6–7).
- **Conclusion**: Statistics is used to analyse problems like rising prices, growing population, unemployment and poverty; to evaluate policy impact (e.g., family planning effectiveness); and to aid decision-making (e.g., how much oil India should import in 2025 based on expected domestic production and demand) (NCERT §5, p. 7).
- **Limitation**: "Statistical methods are no substitute for common sense" — illustrated by the family that drowned crossing a river because the average height of the family exceeded the average depth of the river; the fault lies in misuse of averages, not in the method itself (NCERT box, p. 7).
- **Why study Statistics**: Statistics helps an economist look at "economic facts" as numerical data, condense the volume of information, make precise statements rather than vague claims, and discover regularities (NCERT §3, p. 5). Statistics involves filtering — not every fact is collected, only those relevant to the problem.
- **Singular vs plural usage**: NCERT explains Statistics is used in both senses — in the plural ("statistics" = numerical data such as employment statistics, foreign-trade statistics, literacy statistics) and in the singular ("Statistics" = the discipline/method for handling such data) (NCERT §3, p. 5). CUET sometimes tests this distinction directly.
- **Subject-matter sweep**: the NCERT lists at least nine fields where Statistics is applied — accounting, economics, management, business, physics, chemistry, finance, psychology and sociology — to underline that the methods are general-

purpose and not exclusive to Economics (NCERT §3, p. 5). Students must remember the discipline is interdisciplinary.

- **The "two examples of data" in NCERT (p. 5)**: (i) rice production rising from 39.58 million tonnes (1974–75) to 106.5 million tonnes (2013–14) — a quantitative time-series; and (ii) classification of persons by skill into unskilled / skilled / highly-skilled — a qualitative ordinal classification. Both must be remembered as concrete illustrations.
- **Examples of qualitative attributes**: the NCERT lists nationality, literacy, religion, gender and marital status as classic qualitative variables that economists must still record and tabulate, even though no numerical value attaches to them (NCERT §3, p. 5). Such variables typically use frequency counts of categories rather than measurement.
- **Examples of quantitative variables in Economics**: marks scored by a student, prices of commodities, age of family members, income of households, output of a factory, area under wheat, population of a city — each varies across units, and each is raw material for statistical analysis (NCERT §3, pp. 5–6).
- **Precision function in detail**: the NCERT contrasts "310 people died and 4670 wounded" with vague journalistic phrases like "hundreds died" — showing how Statistics replaces approximation with precise magnitudes that policymakers can act upon (NCERT §4, p. 6). Without precision, no relief allocation is possible.
- **Condensation function illustrated**: a single number — say, "average per capita income of India is Rs X" — is more useful for policy than the entire payroll of 140 crore Indians (NCERT §4, p. 6). The mean condenses millions of values into one comprehensible figure, even at the cost of detail.
- **Relationships function — three NCERT examples**: (i) price vs demand (Law of Demand); (ii) income vs consumption (Engel curves implied); (iii) government expenditure vs price level (fiscal–monetary linkage) (NCERT §4, p. 6). Each is a relationship a statistical regression or correlation could later quantify in kest107.
- **Prediction function — concrete example**: today's investment levels in plant, equipment and infrastructure can be statistically related to next year's national income, so government and firms use such forecasts to plan capital expenditure (NCERT §4, p. 7). Prediction is therefore future-oriented condensation.
- **Policy formulation — concrete example**: planning the country's oil-import bill for, say, 2025 requires projecting domestic crude production AND domestic consumption demand — both numerical exercises drawn from past trends — and then taking the difference (NCERT §5, p. 7). This is the bridge from descriptive statistics to applied economic policy.
- **Variables are central**: a variable is "any characteristic that can take different values across units of observation" — height of a person, marks in an exam, price of a commodity — and Statistics is essentially the science of summarising the behaviour of variables (NCERT §3, p. 5, implicit). Constants are of no interest to Statistics.

- **Exercise true/false bank (p. 8)**: NCERT supplies eight true/false items — useful CUET fodder. "Statistics can only deal with quantitative data" (FALSE), "Statistics solves economic problems" (FALSE), "Economics is the study of the ordinary business of life" (TRUE), and "Statistical methods are no substitute for common sense" (TRUE) are the must-memorise items (NCERT Exercises, p. 8).
- **Economic activity is gainful**: NCERT defines an economic activity as one undertaken to earn a livelihood, in cash or kind — voluntary, unpaid work (housework, charity work without remuneration) does not qualify, although it may produce real value (NCERT §1, p. 2).

2.2 Definitions to memorise

Term	Definition	Page
Economics (Marshall)	"The study of man in the ordinary business of life"	1
Consumer	One who buys goods to satisfy personal, family or gift-giving needs	1
Seller	One who sells goods to make a profit (e.g. shopkeeper)	1
Producer	One who produces goods or provides services	1–2
Service provider	A producer whose output is a service (doctor, taxi driver, teacher) rather than a good	1–2
Employee	One who works for another and is paid wages or salary	2
Employer	One who employs another and pays a wage	2
Economic activity	An activity undertaken for monetary gain — the "ordinary business of life"	2
Gainful employment	Engagement in an economic activity for monetary gain	2
Scarcity	Limited availability of things that satisfy wants; root of all economic problems	2
Alternative uses	Property of resources that allows them to be deployed for different commodities, forcing choice	3
Problem of choice	The need to choose among competing uses for limited resources	3
Consumption	Purchase of goods by consumers to satisfy their needs	3, 8
Production	Manufacture of goods by producers for the market	3, 8
Distribution	Division of national income into wages, profits, rents and interests	3, 8
GDP (Gross Domestic Product)	Total income arising from what has been produced in the country	3
Economic data	Economic facts collected for understanding economic problems	4

Term	Definition	Page
Policy	Measure used to solve an economic problem	4
Statistics (definition 1)	The study of numbers relating to selected facts in a systematic form	4
Statistics (definition 2)	Collection, analysis, interpretation and presentation of numerical data	5
Quantitative data	Data measurable in numerical terms	5
Qualitative data	Data describing attributes that cannot be measured in numbers	5
Variable	Any characteristic that can take different values across units of observation	5
Numerical index	Summary measure like mean, variance or standard deviation	5
Prediction (function of Statistics)	Use of past and present data to forecast future values of an economic variable	7

2.3 Diagrams / processes to remember

- **Opening collage (p. 1)**: images of agricultural and industrial production, retail markets and a classroom — visually depicting consumption, production and distribution.
- **"What to buy and what to leave!!!" sketch (p. 3)**: illustrates the consumer's problem of choice between alternative goods (clothes, ball, mobile, etc.) given limited income.
- **Statistical process flow (p. 5)**: Collection → Presentation (tabular, diagrammatic, graphic) → Summarisation (mean, variance, standard deviation) → Analysis and Interpretation.
- **Aladdin and Magic Lamp analogy (p. 2)**: unlimited wishes vs real-life scarcity of pocket money — anchors the concept of scarcity.
- **River-crossing story (p. 7, boxed)**: average height of family > average depth of river leads to drowning — illustrates that statistical methods are no substitute for common sense.
- **Three branches diagram (mental flowchart)**: Economics → Consumption + Production + Distribution → each branch demands its own data and statistical tools.
- **Rice-production time series (p. 5)**: NCERT cites two snapshots of Indian rice output — 39.58 million tonnes in 1974–75 and 106.5 million tonnes in 2013–14 — across roughly four decades. As an arithmetic illustration the absolute increase is 106.5 − 39.58 = 66.92 million tonnes, the proportional increase is 66.92 / 39.58 ≈ 1.69 (i.e., a 169% rise), and the compound annual growth rate over 39 years is approximately (106.5 / 39.58)^(1/39) − 1 ≈ 2.57%. This single sentence in NCERT is

therefore a complete worked example of how raw economic facts become a quantitative statement.

- **Skill-level qualitative scale (p. 5)**: a three-rung qualitative ordinal classification — unskilled → skilled → highly skilled — which, although non-numerical, can still be tabulated and summarised by counts and percentages. Code these as ranks 1, 2, 3 to convert qualitative data into a quantitative ordinal variable.
- **Aladdin lamp vs pocket money sketch (mental)**: NCERT contrasts an infinite-wish lamp with a child's limited pocket money — every additional toy bought means one less chocolate, etc., introducing the implicit notion of opportunity cost without naming it. The illustration anchors why "want > resource" produces choice.
- **Five-function checklist (p. 6–7)**: a useful one-line mnemonic is "P-C-R-P-P" — Precision, Condensation, Relationships, Prediction, Policy — which mirrors the order in which the NCERT presents the five functions and is a high-yield memory aid for CUET MCQs that ask "which of the following is NOT a function of Statistics".

2.5 Key formulas / structural ratios

Concept	Expression / Note	NCERT page
Statistical workflow	Collection → Presentation → Summarisation → Analysis & Interpretation	5
Choice principle	Wants > Resources ⇒ Choice required	2–3
GDP identity (introductory)	GDP = Total income earned from goods and services produced within the country	3
Distribution shares	National Income = Wages + Salaries + Profits + Rents + Interest	3
Function check	Precise facts + Condensation + Relationships + Prediction + Policy = role of Statistics	6–7

2.4 Common confusions / NTA trap points

- **"Statistics solves economic problems"** — FALSE. Statistics only helps analyse problems and formulate policies; it does not solve them by itself.
- **"Statistics deals only with quantitative data"** — FALSE. Economics also uses qualitative data such as gender, health and skill levels.
- **Scarcity ≠ shortage of one commodity**: it is the general condition of limited resources against unlimited wants. Long queues, crowded transport and rush for film tickets are all manifestations.
- **Distribution** in this chapter does NOT mean the physical distribution of goods to shops; it means the division of national income into wages, profits, rents and interest.

- **A producer is not only a manufacturer** — service providers (doctor, porter, taxi driver, transporter) are also producers.
- Two valid definitions of Statistics are given: "the study of numbers relating to selected facts in a systematic form" (p. 4) AND "collection, analysis, interpretation and presentation of numerical data" (p. 5). Both may appear as distractors.
- **Marshall vs Robbins**: Marshall's "ordinary business of life" is highlighted, but the working definition in §1 (p. 4) is in Robbins-style scarcity language. Do not interchange the two attributions.
- **Quantitative ≠ continuous**: marks obtained, rice tonnage and population counts are all quantitative even if some are discrete.
- **Branches are THREE (not four)**: Consumption, Production, Distribution. Exchange is not listed.
- **Average pitfalls**: the river story warns against using arithmetic mean blindly when dispersion matters.
- **Functions are FIVE (not four or six)**: precise facts, condensation, relationships, prediction, policy.
- **Economic activity requires monetary gain**: unpaid domestic chores are not classified as economic activity in this chapter.

🎯 Practice MCQs

Q1. Who described Economics as "the study of man in the ordinary business of life"?

A. Adam Smith

B. Alfred Marshall

C. Lionel Robbins

D. Paul Samuelson

Q2. Which of the following is the root of all economic problems?

A. Inflation

B. Unemployment

C. Scarcity

D. Inequality

Q3. Match the agents with their descriptions: | List I | List II | |---|---| | P. Consumer | 1. Manufactures goods for the market | | Q. Seller | 2. Buys goods to satisfy needs | | R. Producer | 3. Works for another for wages/salary | | S. Employee | 4. Sells goods to make a profit |

A. P-2, Q-4, R-1, S-3

B. P-4, Q-2, R-3, S-1

C. P-2, Q-1, R-4, S-3

D. P-3, Q-4, R-1, S-2

📊 PYQ Alignment

This being the foundational chapter of the Statistics for Economics unit, CUET typically draws 1–2 direct questions per year focused on definitions (consumer, producer, scarcity, statistics), the three branches of Economics (consumption, production, distribution), the distinction between quantitative and qualitative data, and the functions/limitations of Statistics. Marshall's definition, the "scarcity is the root of all economic problems" line, and the Exercise true/false items (especially "Statistics solves economic problems" — false) are recurring favourites for distractor design. See previous CUET PYQs on this chapter.