A. ASSIGNMENT RECAP

- Write **a 3000-word report** to analyze a provided dataset on **crude birth rates** and GNI per capita for various countries and address specific questions on descriptive statistics, probability, confidence intervals, hypothesis testing, and survey methodology.

Suggested Structure:

I. Introduction (Suggested 500 words)
II. Probability & Descriptive Statistic
  A. Probability (Suggested 150 words)
  B. Descriptive Statistic (Suggested 500 words)
III. Confidence Intervals
  A. Computation (Suggested 150 words)
  B. Assumption (Suggested 100 words)
  C. Discussion (Suggested 150 words)
IV. Hypothesis Test
  A. Hypothesis Testing (Suggested 500 words)
  B. Possible impact (Suggested 150 words)
V. Overall Conclusion (Suggested 300 words)
VI. Extension (Suggested 500 words)

B. KEYWORD EXPLANATIONS

1. Crude Birth Rate

The crude birth rate is the total number of live births per 1,000 people in a population over a given period of time, usually one year. It provides a measure of fertility rates and population growth trends within a country.

2. GNI per Capita

Gross national income (GNI) per capita divides a country's total national income by its population. It represents the average income earned per person and is frequently used to gauge the standard of living or economic well-being of a population.

3. Descriptive statistics

Descriptive statistics are mathematical quantities that summarize key characteristics of a dataset, such as central tendency, variability, distributions, trends, and correlations. They provide simple summaries about the sample and variables being studied.

4. Probability

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5. Confidence Interval

A confidence interval gives a range of plausible values for an unknown population parameter based on a sample estimate. It indicates that the true parameter lies within a range around the sample estimate with a certain confidence level.

Example: if you are estimating a 95% confidence interval around the mean proportion of female babies born every year based on a random sample of babies, you might find an upper bound of 0.56 and a lower bound of 0.48. These are the upper and lower bounds of the confidence interval. The confidence level is 95%

6. Hypothesis testing

Hypothesis testing is a formal process in statistical inference that uses sample data to evaluate claims about a population parameter. It allows assessment of statistical significance by quantifying the probability a result occurred by chance.