2022 120,000

(a) Fit a linear regression model to the data. (b) Use the model to predict the demand for the company's products next year.

9. A company wants to test the effectiveness of a new advertising campaign. The company randomly assigns 100 customers to the new advertising campaign and another 100 customers to the old advertising campaign. The following table shows the number of sales generated by each group of customers:



- 1. Descriptive statistics are used to summarize and describe data, while inferential statistics are used to make inferences about a population based on a sample.
- 2. The four types of data scales are nominal, ordinal, interval, and ratio. Nominal scales are used to classify data into categories. Ordinal scales are used to rank data, but the difference between each rank is not necessarily equal. Interval scales are used to measure data, but the zero point is arbitrary. Ratio scales are used to measure data, and the zero point is meaningful.
- 3. A population is the entire group of individuals or objects that you are interested in studying, while a sample is a subset of the population.
- 4. The four most common types of probability distributions are the normal distribution, the binomial distribution, the Poisson distribution, and the exponential distribution.

- Count how many times each value or category appears in the data set.

- Record the counts in a table with two columns: one for the values or categories and one for the frequencies.

- Optionally, calculate the relative frequencies by dividing each frequency by the total number of observations and multiplying by 100.

- Question 5: What is a normal distribution and what are its characteristics? (4 marks)

- Answer: A normal distribution is a symmetric bell-shaped curve that describes how many variables are distributed in nature. It has these characteristics:

- The mean, median and mode are equal and located at the center of the curve.

- The total area under the curve is equal to 1 or 100%.

- The curve is asymptotic, meaning that it approaches zero as it extends infinitely in both directions.

- The curve is determined by two parameters Somean and the standard deviation. The mean indicates the location of the certar and the standard deviation indicates the spreador variability come data.

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