🌐 English ˅   **Due**   Apr 21, 11:59 PM +07

Your grade: 100%

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[**Next item** →]

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1. A company wants to forecast future profits based on the number of monthly marketing campaigns. Which type of analysis is most suitable for this task?   **1 / 1 point**

- ○ Classification
- ○ Clustering
- ○ Time-series analysis
- ◉ Regression

   ⊘ **Correct**
   Regression analysis is suitable for predicting outcomes based on the relationship between variables.

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2. Which of the following examples best demonstrates when to use simple regression?   **1 / 1 point**

- ◉ Estimating plant growth based on the amount of daily sunlight
- ○ Analyzing the relationship between product price, product reliability, quality, and customer satisfaction rating
- ○ Determining if customers belong to high, medium, or low-spending groups
- ○ Forecasting monthly sales based on historical sales data and economic indicators

   ⊘ **Correct**
   Simple regression is the most suitable method of analyzing the relationship between two continuous variables.

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3. A multinational company is trying to predict employee productivity based on several factors, including hours of training, years of experience, and the number of completed projects. What regression technique would allow them to consider all these variables in their model?   **1 / 1 point**

- ○ Simple regression
- ◉ Multiple linear regression
- ○ Simple logarithmic regression
- ○ Simple polynomial regression

   ⊘ **Correct**
   Multiple linear regression can incorporate independent variables such as training hours, experience, and completed projects.

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4. Which scenario best demonstrates the appropriate use of logarithmic regression?   **1 / 1 point**

- ○ Predicting population growth where growth rate increases over time
- ○ Modelling a proportional increase in sales with increasing advertising budget
- ◉ Estimating productivity gains that decrease with each additional hour of employee training
- ○ Analyzing the relationship between distance traveled and fuel consumption

   ⊘ **Correct**
   Logarithmic regression is effective for capturing diminishing returns, where gains reduce as investment increases.

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5. A financial analyst is using logistic regression to predict whether a customer will default on a loan based on features such as income, credit score, and existing debt. The model shows good accuracy but struggles with a high false positive rate, incorrectly identifying many low-risk customers as high-risk. What method can the analyst employ to improve the model's ability to correctly classify customers?   **1 / 1 point**

- ○ Implement regularization techniques
- ◉ Tune the classification threshold
- ○ Collect more data
- ○ Incorporate more features

   ⊘ **Correct**
   Adjusting the classification threshold can help find a better balance between sensitivity and specificity, reducing false positives.

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6. An e-commerce company uses logistic regression to predict whether a product will be returned based on order details (like delivery time and product rating). What does a predicted probability of 0.8 mean in this case?   **1 / 1 point**

- ○ The product will definitely be returned
- ◉ There is an 80% chance that the product will be returned
- ○ The product will definitely not be returned
- ○ There is an 80% chance that the product will not be returned

   ⊘ **Correct**
   In logistic regression, the model predicts the probability of a specific class (for example, "returned"). A predicted probability of 0.8 means the model estimates there is an 80% likelihood that the event (product return) will occur.

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7. In a multi-class classification problem, log loss is used to measure model performance. Which of the following statements is true about log loss in this context?   **1 / 1 point**

- ○ Log loss penalizes the model more for incorrect predictions when the predicted probabilities are low.
- ○ Log loss is only relevant for binary classification and cannot be applied to multi-class problems.
- ○ Log loss always prefers high confidence predictions, regardless of their correctness.
- ◉ A lower log loss indicates better model performance, as it means the model's predictions are closer to the true labels.

   ⊘ **Correct**
   A lower log loss indicates better model performance because it reflects predictions that are closer to the actual labels.