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Welcome to this session

Skills Bootcamp:

Introduction to Machine Learning Q&A Session

The session will start shortly...

Questions? Drop them in the chat.
We'll have dedicated moderators
answering questions.

Skills Bootcamp Data Science Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly. **(Fundamental British Values: Mutual Respect and Tolerance)**

- No question is daft or silly - **ask them!**

- There are **Q&A sessions** midway and at the end of the session, should you wish to ask any follow-up questions. We will be answering questions as the session progresses as well.

- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Academic Sessions. You can submit these questions here: **Questions**

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Skills Bootcamp Data Science Housekeeping

- For all **non-academic questions**, please submit a query: **www.hyperiondev.com/support**

- **Report a safeguarding incident: www.hyperiondev.com/safeguardreporting**

- We would love your feedback on lectures: **Feedback on Lectures.**

- Find all the lecture **content** in your **Lecture Backpack** on GitHub.

- If you are hearing impaired, kindly use your computer's function through Google chrome to enable captions.

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Safeguarding & Welfare

We are committed to all our students and staff feeling safe and happy; we want to make sure there is always someone you can turn to if you are worried about anything.

If you are feeling upset or unsafe, are worried about a friend, student or family member, or you feel like something isn't right, speak to our safeguarding team:

Ian Wyles
Designated Safeguarding Lead

Simone Botes

Nurhaan Snyman

Rafiq Manan

Ronald Munodawafa

Tevin Pitts

Scan to report a safeguarding concern

or email the Designated Safeguarding Lead:
Ian Wyles
safeguarding@hyperiondev.com

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Skills Bootcamp
Progression Overview

✅ Criterion 1 - Initial Requirements

Specific achievements within the first two weeks of the program.

To meet this criterion, students need to, by no later than **01 December 2024 (C11)** or **22 December 2024 (C12):**

- **Guided Learning Hours** (GLH)**:** Attend a minimum of 7-8 GLH per week (lectures, workshops, or mentor calls) for a total minimum of **15 GLH.**

- **Task Completion:** Successfully complete the **first 4 of the assigned tasks.**

✅ Criterion 2 - Mid-Course Progress

Progress through the successful completion of tasks within the first half of the program.

To meet this criterion, students should, by no later than **12 January 2025 (C11)** or **02 February 2025 (C12):**

- **Guided Learning Hours** (GLH)**:** Complete at least **60 GLH.**

- **Task Completion :** Successfully complete the **first 13 of the assigned tasks.**

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Skills Bootcamp
Progression Overview

✅ Criterion 3 – End-Course Progress

Showcasing students' progress nearing the completion of the course.

To meet this criterion, students should:

- **Guided Learning Hours** (GLH)**:** Complete the **total minimum required GLH,** by the **support end date**.

- **Task Completion :** **Complete all mandatory tasks**, including any necessary resubmissions, by the end of the bootcamp, **09 March 2025 (C11)** or **30 March 2025 (C12)**.

✅ Criterion 4 - Employability

Demonstrating progress to find employment.

To meet this criterion, students should:

- **Record an Interview Invite:** Students are required to record proof of invitation to an interview by **30 March 2025 (C11)** or **04 May 2025 (C12)**.

  - **South Holland Students** are required to proof and interview by **17 March 2025**.

- **Record a Final Job Outcome :** Within 12 weeks post-graduation, students are required to record a job outcome.
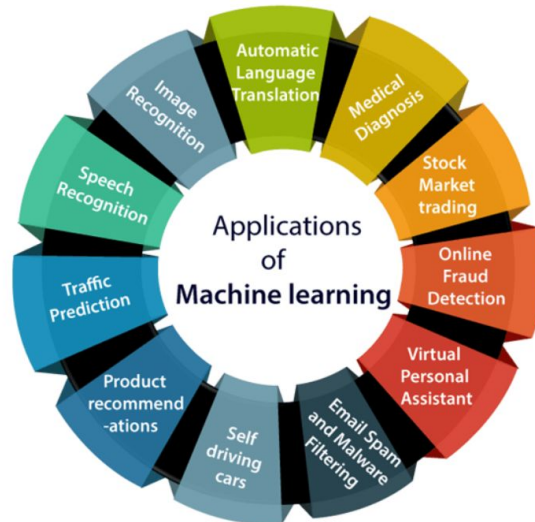
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Learning Outcomes

- Build linear regression models and apply them to real-world datasets.

- Split datasets into training and testing sets, and evaluate model performance on unseen data using appropriate metrics.

- Use a trained model to make predictions on new, unseen data.

- Consolidate their understanding of machine learning concepts, specifically linear regression, and apply these principles to solve problems.

Tutorial Overview

➔ This session will apply Machine Learning concepts previously covered on a different dataset.

➔ The tutorial will end with an extensive poll assessment to review and reinforce key concepts covered throughout the week.

Machine Learning in the Real World

Machine learning empowers data scientists to unlock insights, optimise processes, and solve real-world problems across industries.

Let's Code!

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Final Introduction to Machine Learning Polls Assessment

Which of the following best describes the purpose of simple linear regression?

1. To classify data points into distinct categories
2. To estimate the relationship between two continuous variables
3. To cluster data points based on their similarities
4. To predict the probability of an event occurring

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What does the coefficient of determination (R-squared) represent in a linear regression model?

1. The average squared difference between predicted and actual values
2. The proportion of variance in the target variable explained by the model
3. The slope of the regression line
4. The intercept of the regression line

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Which Python library is commonly used for implementing machine learning algorithms, including linear regression?

1. NumPy
2. Pandas
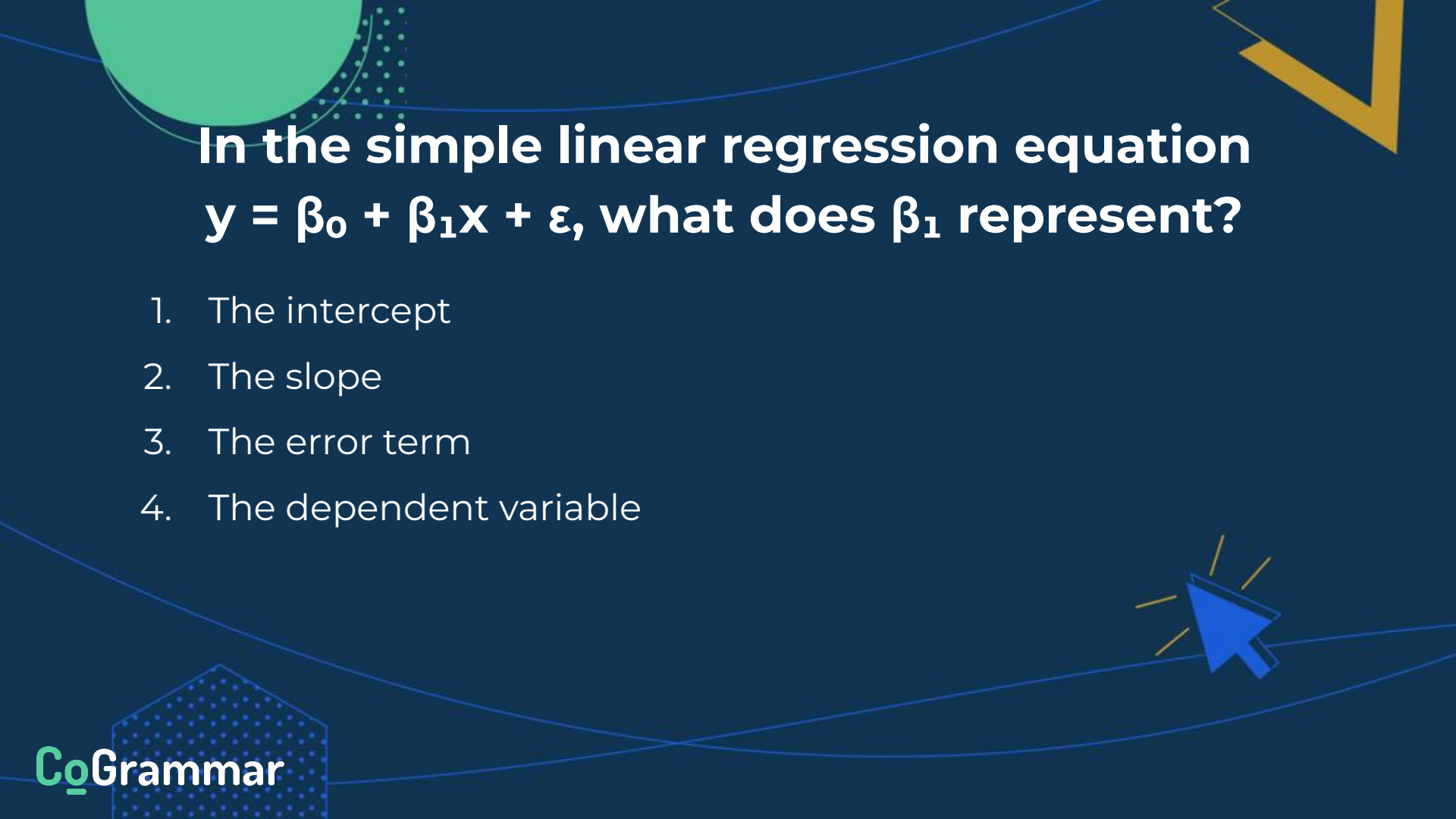3. Matplotlib
4. Scikit-learn

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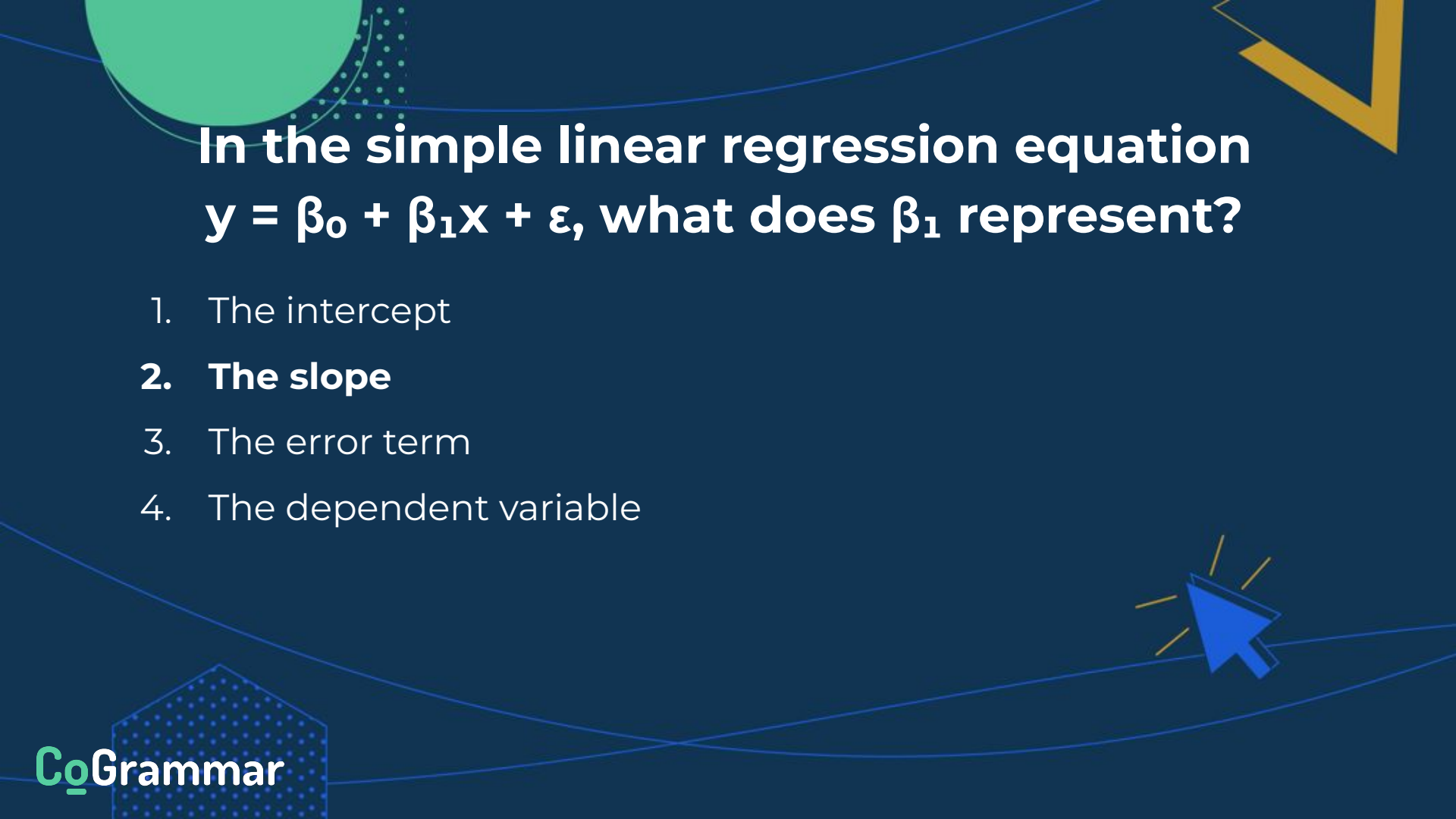
1. NumPy

2. Pandas

3. Matplotlib

4. **Scikit-learn**

In the simple linear regression equation $y = \beta_0 + \beta_1 x + \varepsilon$, what does β_1 represent?

1. The intercept

2. The slope

3. The error term

4. The dependent variable

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Which assumption of simple linear regression states that the relationship between the independent and dependent variables should be linear?

1. Linearity

2. Independence

3. Homoscedasticity

4. Normality

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Which of the following is an example of a regression problem?

1. Predicting the sentiment of a movie review (positive or negative)
2. Identifying the species of a flower based on its features
3. Estimating the price of a house based on its size and location
4. Grouping customers into different segments based on their purchasing behavior

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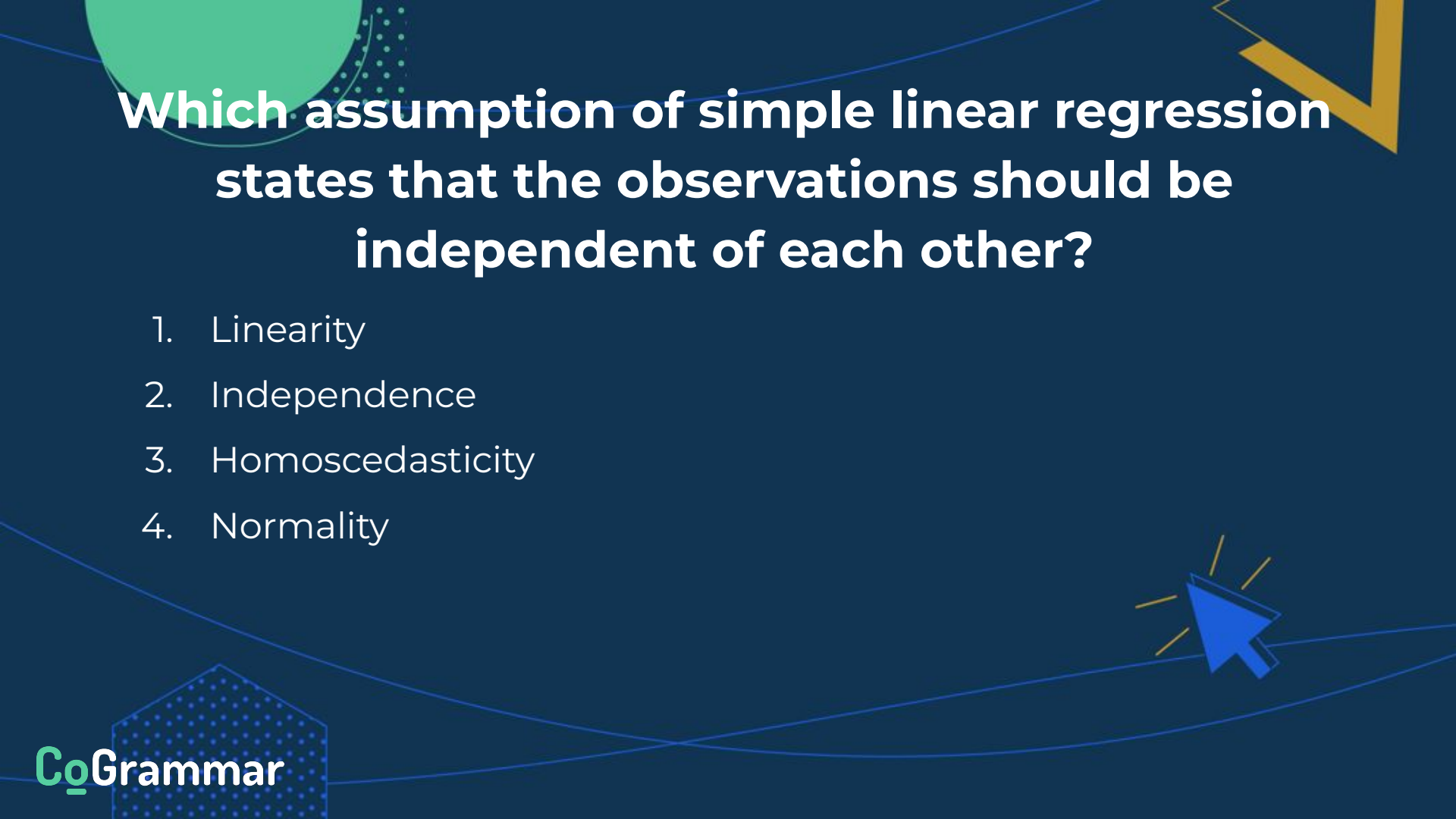
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What does the Mean Squared Error (MSE) measure in a linear regression model?

1. The average squared difference between predicted and actual values

2. The proportion of variance in the target variable explained by the model

3. The correlation between the independent and dependent variables

4. The statistical significance of the regression coefficients

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Which assumption of simple linear regression states that the observations should be independent of each other?

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2. **Independence**
3. Homoscedasticity
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In the context of simple linear regression, what does the term "residual" refer to?

1. The difference between the predicted and actual values
2. The correlation between the independent and dependent variables
3. The statistical significance of the regression coefficients
4. The proportion of variance in the target variable explained by the model

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What is the primary difference between simple linear regression and multiple linear regression?

1. Simple linear regression involves one independent variable, while multiple linear regression involves two or more independent variables

2. Simple linear regression is used for classification, while multiple linear regression is used for regression

3. Simple linear regression assumes a linear relationship, while multiple linear regression assumes a non-linear relationship

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Questions and Answers

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Thank you
for attending

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