

21 When implementing linear regression of some dependent variable y on the set of independent variables $\mathbf{x} = (x_1, \dots, x_r)$, where r is the number of predictors, which of the following statements will be true?

- a) $\beta_0, \beta_1, \dots, \beta_r$ are the **regression coefficients**.
- b) Linear regression is about determining the **best predicted weights** by using the **method of ordinary least squares**.
- c) E is the random interval
- d) Both a and b

Ans d) Both a and b

22) What indicates that you have a **perfect fit** in linear regression?

- a) The value $R^2 < 1$, which corresponds to $SSR = 0$
- b) The value $R^2 = 0$, which corresponds to $SSR = 1$
- c) The value $R^2 > 0$, which corresponds to $SSR = 1$
- d) The value $R^2 = 1$, which corresponds to $SSR = 0$

Ans d) The value $R^2 = 1$, which corresponds to $SSR = 0$

23) In simple linear regression, the value of **what** shows the point where the estimated regression line crosses the y axis?

- a) Y
- b) B_0
- c) B_1
- d) F

Ans b) B_0

24) Check out these four linear regression plots:



Which one represents an **underfitted** model?

- The bottom-left plot
- The top-right plot
- The bottom-right plot
- The top-left plot

Ans d) The top-left plot

25) There are five basic steps when you're implementing linear regression:

- a.** Check the results of model fitting to know whether the model is satisfactory.
- b.** Provide data to work with, and eventually do appropriate transformations.
- c.** Apply the model for predictions.
- d.** Import the packages and classes that you need.
- e.** Create a regression model and fit it with existing data.

However, those steps are currently listed in the wrong order. What's the correct order?

- a) e, c, a, b, d
- b) e, d, b, a, c
- c) d, e, c, b, a
- d) d, b, e, a, c

Ans d) d, b, e, a, c

26) Which of the following are optional parameters to LinearRegression in scikit-learn?

- a) Fit
- b) fit_intercept
- c) normalize
- d) copy_X
- e) n_jobs
- f) reshape

Ans b) fit_intercept, c) normalize, d) copy_X, e) n_jobs

27) While working with scikit-learn, in which type of regression do you need to transform the array of inputs to include nonlinear terms such as x^2 ?

- a) Multiple linear regression
- b) Simple linear regression
- c) Polynomial regression

Ans c) Polynomial regression

28) You should choose statsmodels over scikit-learn when:

- A) You want graphical representations of your data.
- b) You're working with nonlinear terms.
- c) You need more detailed results.
- d) You need to include optional parameters.

Ans c) You need more detailed results.

29) _____ is a fundamental package for scientific computing with Python. It offers comprehensive mathematical functions, random number generators, linear algebra routines, Fourier transforms, and more. It provides a high-level syntax that makes it accessible and productive.

- a) Pandas
- b) Numpy
- c) Statsmodel
- d) scipy

Ans b) Numpy

30) _____ is a Python data visualization library based on Matplotlib. It provides a high-level interface for drawing attractive and informative statistical graphics that allow you to explore and understand your data. It integrates closely with pandas data structures.

- a) Bokeh
- b) Seaborn
- c) Matplotlib
- d) Dash

Ans b) Seaborn