



Quiz on Data Visualization and Time Series & Forecasting

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00:18 / 20:00

Question

Possible Points: 2

_____ is the amount by which the predicted values differs from the observed value of the time series variable

Responses

Forecast error

Forecast error

Smoothing constant

Smoothing constant

Mean forecast error

Mean forecast error

Mean absolute error

The correct answer is: Forecast error



Explanation:

Forecast error is the difference between the actual (observed) value and the predicted (forecasted) value of a time series variable. It is calculated as:

$$\text{Forecast Error} = \text{Actual Value} - \text{Forecasted Value}$$



A crosstabulation in Microsoft Excel is known as a
Responses

Histogram

Histogram

Bar chart

Bar chart

Pivot Table

Pivot Table

Scatter chart



The correct answer is: Pivot Table

Explanation:

A Pivot Table in Microsoft Excel is used for **crosstabulation** — it summarizes and analyzes data, allowing you to group and aggregate information across two or more variables (like rows and columns).



IF the forecasted value of the time series variable for period 2 is 22.5 and the actual value observed for period 2 is 25, what is the forecast error in period 2?

To calculate the **forecast error**, use the formula:

$$\text{Forecast Error} = \text{Actual Value} - \text{Forecasted Value}$$

Given:

- Forecasted value = 22.5
- Actual value = 25



Answer: 2.5



A chart similar to a scatter chart, but uses a line to connect the points in the chart is called the
Responses

Line chart
Line chart

Bar chart
Bar chart

Scatter plot
Scatter plot

Trendline

The correct answer is: Line chart

Explanation:

A line chart is similar to a scatter chart but connects the data points with lines, making it useful for visualizing trends over time or sequential data.



In the moving averages method the order k determine the
Responses

compensation for forecasting error
compensation for forecasting error

number of time series values under consideration
number of time series values under consideration

number of sample in each unit time period
number of sample in each unit time period

error tolerance
error tolerance

The correct answer is: number of time series values under consideration

Explanation:

In the moving averages method, the order k refers to how many past time series values are averaged to produce the forecast. For example, a 3-period moving average ($k = 3$) uses the last 3 data points to calculate the forecast.



A forecast is defined as a(n):
Responses

outcome of a random experiment.
outcome of a random experiment.

quantitative method used when historical data on the variable of interest are either unavailable or not applicable.
quantitative method used when historical data on the variable of interest are either unavailable or not applicable.

set of observation a variable measured at successive points in time.
set of observation a variable measured at successive points in time.

prediction of future values of a time series.

The correct answer is: prediction of future values of a time series

Explanation:

A forecast is a prediction of future values based on patterns, trends, or models derived from historical data in a time series.



In the scatter chart indicate a positive linear relationship between two variables, then their correlational coefficient is
Responses

between -1 and 0
between -1 and 0

between 0 and +1
between 0 and +1



greater than 1

equal to -1

The correct answer is: **between 0 and +1**

Explanation:

A positive linear relationship means that as one variable increases, the other also increases. In this case, the correlation coefficient (r) lies between 0 and +1:

- 0 indicates no linear correlation
- +1 indicates a perfect positive linear correlation



Which of the following states the objective of time series analysis?
Responses

to uncover a pattern in the time series and then extrapolate the patterns into the future.

patterns into the future.

to analyze the time-dependent environmental factors that affected variable values in the past.

to analyze the time-dependent environmental factors that affected variable values in the past.

to study the variation of time with respect to increase in the variable value.

to study the variation of time with respect to increase in the variable value.

to use present variable values to study what should have been the past values.

The correct answer is: **to uncover a pattern in the time series and then extrapolate the patterns into the future.**

Explanation:

The main objective of time series analysis is to identify patterns (such as trends, seasonality, or cycles) in historical data and then use those patterns to forecast future values.



Qualitative forecasting methods are used when:
Responses

information on past values of the variable being measured is quantitative.

information on past values of the variable being measured is quantitative.

historical data on the variable being forecast are either unavailable or not applicable.

historical data on the variable being forecast are either unavailable or not applicable.

historical data on the variable being forecast are available.
historical data on the variable being forecast are available.

it is reasonable to assume that past is prologue.

The correct answer is: historical data on the variable being forecast are either unavailable or not

Explanation:

Qualitative forecasting methods are used when there is **little or no historical data**, or when the data is not reliable or relevant. These methods rely on expert judgment, intuition, or market research rather than numerical data.



A _____ is a line that provide an approximation of the relationship between the variables

Responses

Gridline
Gridline

Sparkline

Trendline
Trendline

Line chart

The correct answer is: Trendline

Explanation:

A **trendline** is a line drawn on a chart that **approximates the relationship** between variables, often used to show the overall direction or trend in data (especially in scatter plots or line charts).



Which of the following measures of forecast accuracy is susceptible to the problem of the positive and negative forecast errors offsetting one another?

Responses

Mean squared error
Mean squared error

Mean absolute error

Mean forecast error

Mean absolute percentage error

The correct answer is: Mean forecast error

Explanation:

Mean Forecast Error (MFE) is calculated by averaging the forecast errors ($\text{actual} - \text{forecast}$). Since errors can be positive or negative, they can cancel each other out, leading to a misleadingly low or zero average even when individual errors are large. This is why MFE is susceptible to the problem of offsetting errors.



An exponential trend pattern is appropriate when Responses

there are random fluctuations in the variable value with time.
there are random fluctuations in the variable value with time.

the amount of increase periods in the value on the variable is constant.
the amount of increase periods in the value on the variable is

there is no relationship between the time series variable and time.
there is no relationship between the time series variable and time.

the percentage change between periods in the value of the variable is relatively constant.

The correct answer is: the percentage change between periods in the value of the variable is relatively constant.

Explanation:

An **exponential trend pattern** is appropriate when the data grows (or decays) by a **constant percentage** over time, rather than by a constant amount. This indicates **multiplicative** growth, which is best modeled with an exponential trend.



The software package most commonly used for creating simple chart
is
Responses ↓

SAS
SAS

Excel
Excel

XMLMiner
XMLMiner

R

The correct answer is: Excel

Explanation:

Microsoft Excel is the most commonly used software for creating **simple charts** such as bar charts, line charts, pie charts, and scatter plots. It is user-friendly and widely accessible, making it popular for basic data visualization tasks.



↓
Responses

is associated with measuring forecast accuracy
is associated with measuring forecast accuracy

cannot be negative
cannot be negative

cannot take a value of zero
cannot take a value of zero

takes a positive value when the forecast is too high

The correct answer is: is associated with measuring forecast accuracy

Explanation:

Forecast error is the difference between the actual and forecasted values, and it is used to measure forecast accuracy. It can be positive, negative, or zero, depending on whether the forecast overestimates, underestimates, or exactly matches the actual value.



A set of observations on a variable measured at successive points in time or over successive periods of time constitute a _____.
Responses ↓

logarithmic series
logarithmic series

time series

time series

geometric series
geometric series

time invariant set

The correct answer is: time series

Explanation:

A **time series** is a sequence of data points collected or recorded at successive points in time, usually at equal intervals (e.g., daily, monthly, yearly). It is used to analyze trends, patterns, and make forecasts.

_____ are visual methods of displaying data.

Responses

Tables
Tables

Pivot Tables
Pivot Tables

Charts
Charts

Crosstabas

The correct answer is: Charts

Explanation:

Charts are visual methods of displaying data, allowing for easier interpretation of patterns, trends, and comparisons. Examples include bar charts, line charts, scatter plots, and so on.

A line chart displaying the data values collected over a period of time is termed as a boxplot.

Responses

Boxplot
Boxplot

Time Series Plot
Time Series Plot

Frequency graph
Frequency graph

Dotplot
Dotplot

The correct answer is: Time Series Plot

Explanation:

Time series plots are used to show how a variable changes at regular intervals. A boxplot, on the other hand, is used to display the distribution of a dataset, not changes over time.

The best way to differentiate chart elements is using

Responses

Bubbles
Bubbles

Labels
Labels

Chart Titles

Chart Titles

Too many colors



The correct answer is: Labels

Explanation:

Labels clearly identify data points, series, or categories in a chart, making it easier to **differentiate chart elements** accurately and effectively. Using **too many colors** can be confusing and reduce readability.



A ___ is a graphical presentation of the relationship between two quantitative variables.

Responses

Scatter chart

Scatter chart

Histogram

Histogram

Bar chart

Bar chart

Pie chart



The correct answer is: Scatter chart

Explanation:

A scatter chart (or scatter plot) is a graphical presentation that shows the **relationship between two quantitative variables** by plotting points on an X and Y axis. It's commonly used to identify correlations or patterns between variables.



A useful type of table for describing data of two variables is a

Responses

Cross Tabulation

Cross Tabulation

Data table

Data table

Scatter chart

Scatter chart

Bubble chart



The correct answer is: Cross Tabulation

Explanation:

A cross tabulation (or crosstab) is a type of table used to **describe the relationship between two variables** by displaying the frequency distribution of their combinations. It's especially useful for categorical data.



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