Here's the solution to your questions:

**Q1. Create a Pandas Series that contains the following data: 4, 8, 15, 16, 23, and 42. Then, print the series.**

import pandas as pd

# Creating a Pandas Series

data = pd.Series([4, 8, 15, 16, 23, 42])

print(data)

**Q2. Create a variable of list type containing 10 elements in it, and apply pandas.Series function on the variable and print it.**

# Creating a list

my\_list = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

# Converting list to Pandas Series

list\_series = pd.Series(my\_list)

print(list\_series)

**Q3. Create a Pandas DataFrame that contains the following data:**

Assuming the data to include columns Name, Age, and City:

# Creating a DataFrame

data = {

'Name': ['Alice', 'Bob', 'Charlie'],

'Age': [25, 30, 35],

'City': ['New York', 'Los Angeles', 'Chicago']

}

df = pd.DataFrame(data)

print(df)

**Q4. What is a ‘DataFrame’ in pandas and how is it different from pandas.Series? Explain with an example.**

* **DataFrame**: A 2-dimensional, tabular data structure in Pandas, where data is organized into rows and columns (similar to a spreadsheet).
* **Series**: A 1-dimensional array-like object that holds data of the same type.

**Example:**

# Series example

series = pd.Series([1, 2, 3, 4])

print("Series:")

print(series)

# DataFrame example

dataframe = pd.DataFrame({

'Numbers': [1, 2, 3, 4],

'Letters': ['A', 'B', 'C', 'D']

})

print("\nDataFrame:")

print(dataframe)

**Q5. What are some common functions you can use to manipulate data in a Pandas DataFrame? Can you give an example of when you might use one of these functions?**

Some common functions:

1. **head()**: View the first few rows.
2. **tail()**: View the last few rows.
3. **describe()**: Get statistical summary.
4. **drop()**: Remove columns or rows.
5. **iloc/loc**: Access rows or columns by index or label.
6. **groupby()**: Group data and perform aggregation.
7. **fillna()**: Fill missing values.
8. **merge()**: Combine multiple DataFrames.

**Example:**

# Using groupby to calculate average age by city

data = {

'Name': ['Alice', 'Bob', 'Charlie', 'David'],

'Age': [25, 30, 35, 40],

'City': ['New York', 'Los Angeles', 'New York', 'Los Angeles']

}

df = pd.DataFrame(data)

grouped = df.groupby('City')['Age'].mean()

print(grouped)

**Q6. Which of the following is mutable in nature: Series, DataFrame, Panel?**

* **Series**: Mutable.
* **DataFrame**: Mutable.
* **Panel**: Mutable (though Panel is deprecated in modern Pandas).

**Q7. Create a DataFrame using multiple Series. Explain with an example.**

# Creating multiple Series

names = pd.Series(['Alice', 'Bob', 'Charlie'])

ages = pd.Series([25, 30, 35])

cities = pd.Series(['New York', 'Los Angeles', 'Chicago'])

# Creating a DataFrame from Series

df = pd.DataFrame({

'Name': names,

'Age': ages,

'City': cities

})

print(df)