In [1]:

```
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, mean_absolute_error, r2_score
```

In [2]:

```
data = pd.read_csv("Advertising.csv")
```

In [3]:

```
print(data.head())
```

```
   Unnamed: 0     TV  Radio  Newspaper  Sales
0           1  230.1   37.8       69.2   22.1
1           2   44.5   39.3       45.1   10.4
2           3   17.2   45.9       69.3    9.3
3           4  151.5   41.3       58.5   18.5
4           5  180.8   10.8       58.4   12.9
```

In [4]:

```
print(data.columns)
```

```
Index(['Unnamed: 0', 'TV', 'Radio', 'Newspaper', 'Sales'], dtype='object')
```

In [5]:

```
X = data[['TV', 'Radio', 'Newspaper']]
y = data['Sales']
```

In [6]:

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42
```

In [7]:

```
model = LinearRegression()
model.fit(X_train, y_train)
```

Out[7]:

▾ LinearRegression

▶ Parameters

In [8]:

```
y_pred = model.predict(X_test)
```

In [9]:

```
mse = mean_squared_error(y_test, y_pred)
mae = mean_absolute_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
```

In [10]:

```
print("\n Model Evaluation Metrics:")
print(f"Mean Squared Error (MSE): {mse:.2f}")
print(f"Mean Absolute Error (MAE): {mae:.2f}")
print(f"R-Squared (R²): {r2:.2f}")
```

```
 Model Evaluation Metrics:
Mean Squared Error (MSE): 3.17
Mean Absolute Error (MAE): 1.46
R-Squared (R²): 0.90
```

In [11]:

```
results = pd.DataFrame({'Actual': y_test, 'Predicted': y_pred})
print("\nActual vs Predicted:")
print(results.head())
```

```
Actual vs Predicted:
     Actual  Predicted
95     16.9  16.408024
15     22.4  20.889882
30     21.4  21.553843
158     7.3  10.608503
128    24.7  22.112373
```

In [ ]:

```

```