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In [10]: import pandas as pd
import numpy as np
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score # corrected 'metrics'
import seaborn as sns
import matplotlib.pyplot as plt
```

```
In [8]: data = pd.read_csv('C:/Users/ADMIN/Downloads/Day_7_sales_data.csv')
```

```
In [12]: print("First 5 rows of the dataset:")
print(data.head())
```

First 5 rows of the dataset:

	Date	Product	Region	Sales	Profit	Quantity
0	2023-01-02	Tablet	East	1061.81	236.12	7
1	2023-01-06	Laptop	North	1926.07	246.34	8
2	2023-01-03	Tablet	East	1597.99	253.17	3
3	2023-01-20	Tablet	North	1397.99	242.23	1
4	2023-01-04	Laptop	West	734.03	140.36	4

```
In [14]: print("\nBasic statistics of numerical columns:")
print(data.describe())
```

Basic statistics of numerical columns:

	Sales	Profit	Quantity
count	20.000000	20.000000	20.000000
mean	1186.553000	211.533000	5.050000
std	461.528444	66.916251	2.543826
min	530.880000	82.160000	1.000000
25%	774.517500	166.515000	2.750000
50%	1104.865000	214.670000	5.000000
75%	1571.080000	248.047500	7.250000
max	1954.860000	364.970000	9.000000

```
In [16]: # 1. Calculate the total sales for each region
total_sales_by_region = data.groupby('Region')['Sales'].sum()
print("Total Sales for Each Region:")
print(total_sales_by_region)
```

Total Sales for Each Region:

Region	Sales
East	5818.93
North	10449.68
South	936.84
West	6525.61

Name: Sales, dtype: float64

```
In [18]: # 2. Find the most sold product (based on quantity)
most_sold_product = data.groupby('Product')['Quantity'].sum().idxmax()
print("\nMost Sold Product (Based on Quantity):")
print(most_sold_product)
```

Most Sold Product (Based on Quantity):
Tablet

```
In [20]: # 3. Compute the average profit margin for each product
data['Profit_Margin'] = (data['Profit'] / data['Sales']) * 100
avg_profit_margin_by_product = data.groupby('Product')['Profit_Margin'].mean()
print("\nAverage Profit Margin for Each Product:")
print(avg_profit_margin_by_product)
```

Average Profit Margin for Each Product:

Product	Profit_Margin
Keyboard	20.080696
Laptop	17.112734
Monitor	15.134989
Smartphone	23.703647
Tablet	19.955758

Name: Profit_Margin, dtype: float64

```
In [ ]:
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