**1: Sales Data by Region**

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| --- | --- | --- | --- |
| **Region** | **Sales ($ thousands)** | **Advertising Cost ($)** | **Customer Satisfaction (out of 10)** |
| North | 250 | 1000 | 8 |
| South | 300 | 1200 | 7 |
| East | 280 | 1100 | 9 |
| West | 270 | 1050 | 7.5 |
| Central | 260 | 1150 | 8.5 |

1. How does customer satisfaction vary with both sales and advertising costs across different regions?
2. Create a 3D scatter plot to visualize the relationship between advertising cost, sales, and customer satisfaction.
3. Is there a correlation between customer satisfaction, sales, and advertising costs based on the 3D plot?
4. Generate a 3D surface plot to show how customer satisfaction changes with variations in both sales and advertising costs.
5. Compare the 3D plots of customer satisfaction against both sales and advertising costs separately. Are there any noticeable trends or outliers?

**2: Product Performance Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **Product** | **Price ($)** | **Units Sold** | **Customer Ratings (out of 5)** |
| A | 50 | 1000 | 4.2 |
| B | 70 | 800 | 4.0 |
| C | 60 | 1200 | 4.5 |
| D | 45 | 1500 | 3.8 |
| E | 55 | 900 | 4.3 |

1. How do customer ratings vary with both product price and units sold?
2. Create a 3D scatter plot to visualize the relationship between units sold, customer ratings, and product price.
3. Is there a correlation between customer ratings, units sold, and product price based on the 3D plot?
4. Generate a 3D surface plot to illustrate how customer ratings change with variations in both units sold and product price.
5. Compare the 3D plots of customer ratings against both units sold and product price separately. Are there any significant insights?

**3: Healthcare Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **Patient** | **Age** | **Blood Pressure (mmHg)** | **Cholesterol Level (mg/dL)** |
| A | 45 | 120/80 | 180 |
| B | 55 | 130/85 | 200 |
| C | 60 | 140/90 | 220 |
| D | 50 | 125/82 | 190 |
| E | 65 | 150/95 | 240 |

1. How does cholesterol level vary with both age and blood pressure among patients?
2. Create a 3D scatter plot to visualize the relationship between blood pressure, age, and cholesterol level.
3. Is there a correlation between cholesterol level, age, and blood pressure based on the 3D plot?
4. Generate a 3D surface plot to show how cholesterol levels change with variations in both age and blood pressure.
5. Compare the 3D plots of cholesterol levels against both age and blood pressure separately. Are there any significant patterns or outliers?

**4: Productivity Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **Employee** | **Hours Worked** | **Tasks Completed** | **Efficiency (%)** |
| A | 40 | 10 | 80 |
| B | 35 | 8 | 75 |
| C | 45 | 12 | 85 |
| D | 38 | 9 | 78 |
| E | 42 | 11 | 82 |

1. How does efficiency vary with both hours worked and tasks completed among employees?
2. Create a 3D scatter plot to visualize the relationship between tasks completed, efficiency, and hours worked.
3. Is there a correlation between efficiency, tasks completed, and hours worked based on the 3D plot?
4. Generate a 3D surface plot to illustrate how efficiency changes with variations in both tasks completed and hours worked.
5. Compare the 3D plots of efficiency against both tasks completed and hours worked separately. Are there any noticeable trends or patterns?

**5: Educational Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **Student** | **Math Score** | **Reading Score** | **Attendance (%)** |
| A | 85 | 78 | 95 |
| B | 72 | 85 | 92 |
| C | 90 | 80 | 98 |
| D | 78 | 75 | 85 |
| E | 88 | 82 | 93 |

1. How do reading scores vary with both math scores and attendance percentage among students?
2. Create a 3D scatter plot to visualize the relationship between math score, reading score, and attendance.
3. Is there a correlation between attendance, math scores, and reading scores based on the 3D plot?
4. Generate a 3D surface plot to show how reading scores change with variations in both math scores and attendance.
5. Compare the 3D plots of reading scores against both math scores and attendance separately. Are there any significant insights or outliers?