



### 1. What was the city with the highest sales?

- **A: Extract Unique Cities:**
  - **Formula:** `=UNIQUE(I2:I9995)`
- **B: Calculate Total Sales per City:**
  - `=SUMIF(I2:I, V2:V532, Q2:Q)`
- **C: Identify Top City:**
  - **Formula:** `=INDEX(V:V, MATCH(MAX(W:W), W:W, 0))`
- **Result:** *New York City* had the highest sales.
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### 2. What is the average discount given for all orders?

- **Formula Applied:** `=ROUND(100*AVERAGE(N:N), 2)`
- **Description:** This formula calculates the average discount in column N, converts it to a percentage, and rounds it to two decimal places.
- **Result:** The average discount is *15.62%*.
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### 3. What is the most popular product among customers in the "Consumer" segment?

- **Formula Applied:**  
`=INDEX(QUERY(A2:F, "SELECT F, SUM(C) WHERE E = 'Consumer' GROUP BY F ORDER BY SUM(C) DESC", 1), 2, 1)`
- **Description:**  
This formula first groups the products (in column F) by the total quantity sold (in column C) for customers in the "Consumer" segment (in column E). It then orders the results in descending order based on the total quantity sold and retrieves the most popular product.
- **Result:** The most popular product among the "Consumer" segment customers is the *Staple envelope*.
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### 4. What is the total profit for the "Office Supplies" category?

- **Formula Applied:**  
`=INDEX(QUERY('Unicorn Data'!G:O, "SELECT G, SUM(O) WHERE G='Office Supplies' GROUP BY G ORDER BY SUM(O) DESC", 1), 2, 2)`
- **Description:**  
 This formula queries the "Unicorn Data" sheet, summing the values in column O for the "Office Supplies" category found in column G. The INDEX function retrieves the total profit for "Office Supplies".
- **Result:** The total profit for the "Office Supplies" category is **122,474**.
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## 5- Who is the customer who has made the most purchases?

- **A: Retrieve Unique Customer Names FROM THE “Unicorn Data” Sheet:**


Formula: `=UNIQUE('Unicorn Data'!D2:D)`

- **B: Count How Many Purchases Each Customer Has Made:**

Formula: `=COUNTIF('Unicorn Data'!D2:D,A2)`

- **C: Identify the Customer with the Most Purchases:**


Formula: `=INDEX(A2:B, MATCH(MAX(B2:B),B2:B,0),1)`

- **Result:** The customer who made the most purchases is **William Brown**.
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## 6. What state made the most profit?

- **Using Sheet Referencing and QUERY to Identify the State with the Highest Profit:**

Formula: `=INDEX(QUERY('Unicorn Data'!J:O, "SELECT J, SUM(O) GROUP BY J ORDER BY SUM(O) DESC LIMIT 1",1), 2, 1)`


- **Purpose:** This formula references the "Unicorn Data" sheet, grouping the data by state (column J) and summing the profit (column O). It orders the results in descending order and uses INDEX to return the state with the highest profit.
- **Result:** The state with the highest profit is **California**.
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## 7. How many orders were shipped via "Standard Class" ship mode?

- **A: Use Sheet Referencing and QUERY to Count Orders Shipped via "Standard Class":**

**Formula:** `=INDEX(QUERY('Unicorn Data'!B:M, "SELECT COUNT(B) WHERE M = 'Standard Class'", 1), 2, 1)`

**Purpose:** This formula references the "Unicorn Data" sheet, counting the number of orders (column B) where the shipping mode is "Standard Class" (column M).


- **Result:** The formula returns the number of orders shipped via **Standard Class**.
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## 8- Which region had the highest sales in June?

- **A: Use Sheet Referencing and QUERY to Identify the Region with the Highest Sales in June:**

**Formula:** `=INDEX(QUERY('Unicorn Data'!A:Q, "SELECT K, SUM(Q) WHERE A >= date '2023-06-01' AND A < date '2023-07-01' GROUP BY K ORDER BY SUM(Q) DESC", 1), 2, 1)`

**Purpose:** This formula references the "Unicorn Data" sheet, filters the data for June using a date range, groups the data by region (column K), and sums the sales (column Q). It orders the regions by total sales and returns the region with the highest sales.

- **Result:** The region with the highest sales in June is **East**.
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## 9. Calculate the price per unit of each product (before discounts), and put it in a separate column. What's the most expensive product?

- **A: Calculate Price per Unit for Each Product (Before Discounts):**

- **Formula:** `=ROUND(Q2 / (C2 * (1 - N2)), 2)`


- **Purpose:** This formula calculates the price per unit before discounts by dividing the total sales (Q column) by the effective quantity (C column), factoring in the discount (N column). The result is rounded to two decimal places.

- **B: Identify the Most Expensive Product:**

- **Formula:** `=INDEX(F:U, MATCH(MAX(U:U), U:U, 1), 1)`
- **Purpose:** This formula retrieves the product name from column **F** by finding the row that contains the highest price per unit in column **U**.
- **Result:** The most expensive product is **Apple iPhone 5S**.
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**10- Create a pivot table that shows the total sales for each manufacturer and category combination. In the "Technology" category, which manufacturer had the second-highest sales?**

**Steps:**

- **Create a Pivot Table.**
- **Add Category and Manufacturer to Rows.**
- **Add Sales to Values, set to SUM.**
- **Sort by Sales in Descending order.**
- **Filter by Technology.**
- **Result:** The manufacturer with the second-highest sales in the "Technology" category is **Canon**.
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**11. What is the category of "Xerox 1887"?**

**Using Sheet Referencing to Find the Subcategory:**


- **Formula:** `=INDEX('Unicorn Data'!F:S, MATCH("Xerox 1887", 'Unicorn Data'!F:F, 1), 14)`
- **Purpose:** This formula searches for "Xerox 1887" in column **F** (Product Name) and returns the corresponding category from column **S**.
- **Result:** The category of **Xerox 1887** is **Envelopes**.
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**12. Calculate the number of days between the order date and the ship date and apply a color scale.**

#### A: Calculate Days Between Dates:


- Formula: `=L2-A2`

#### B: Apply Conditional Formatting:

1. Select the column with the formula.
  2. Go to **Format > Conditional formatting**.
  3. Apply a **color scale** (green for min value, red for max value).
- **Result:** showing the number of days between order and ship dates with a color scale from green (fast) to red (slow).
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#### 13. What is the number of days between the order date and the shipping date for order Id “CA-2015-100363”?

##### Calculating the Number of Days Between Order Date and Ship Date:

- Formula: `=INDEX(L:L, MATCH("CA-2015-100363", B:B, 0)) - INDEX(A:A, MATCH("CA-2015-100363", B:B, 0))`
- **Result:** The number of days between the order date and the shipping date for “CA-2015-100363” is **5** days.
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#### 14. What is the shipping price for order id “CA-2015-100678”?

##### Using Sheet Referencing to Find the Shipping Price:

- Formula: `=INDEX(B:T, MATCH("CA-2015-100678", B:B, 1), 19)`
- This formula finds the row where the order ID “CA-2015-100678” is located in column **B**, and returns the shipping price from column **T** (19th column).
- **Result:** The shipping price for order “CA-2015-100678” is **11.99**.
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**15. Create a new column that concatenates the customer name, city, and state into a single string for each order.**

**Concatenate Order ID, Customer Name, City, and State:**

- **Formula:** `=CONCATENATE(B2, " : ", D2, ", ", I2, ", ", J2)`
  - This formula combines the Order ID (B2), Customer Name (D2), City (I2), and State (J2) into a single string. The result includes a colon after the order ID and commas to separate the city and state for readability.
  - **Result:** The concatenated string will be in the format: **"Order ID: Customer Name, City, State"**.
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**16. Use the IFS function to categorize each order as "High," "Low," or "Loss" based on profit and sales criteria.**

**Categorizing Orders Using the IFS Function:**

- **Formula:**  
  
`=IFS(AND(Q2>200,O2>20),"High",O2>40,"High",O2<=0,"Loss",TRUE,"Low")`
- This formula categorizes orders into:
  - **"High"** if sales (Q2) are greater than 200 **and** profit (O2) is above 20, or if profit is greater than 40.
  - **"Loss"** if the profit is equal to or below 0.
  - **"Low"** for all other cases.
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**16-(1) Use conditional formatting to color the columns with the values "High" in green, "Low" in yellow, and "Loss" in red.**

**Steps:**

- A. Select the column with values **High**, **Low**, or **Loss**.
- B. Go to **Format > Conditional formatting**.

C. Apply the following rules:

- a. Text is exactly "High" → Color: **Green**.
- b. Text is exactly "Low" → Color: **Yellow**.
- c. Text is exactly "Loss" → Color: **Red**.


D. Click **Done**.

**Result:** The column is color-coded based on the values.

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### 16-(2) How many "Loss" cases do we have?

**Count the Number of "Loss" Cases:**

- Formula: **=COUNTIF(U:U, "Loss")**
- This formula counts how many times the value "Loss" appears in column **U**.
- Result: The total number of "Loss" cases is **2029**.
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### 16-(3) Create Dropdowns for Category and Product, and Retrieve the Unit Price

**A: Named Ranges:** I defined Named Ranges for the **category**, **product\_name**, and **unit\_price** columns using **Data > Named ranges**.

**B: Category Dropdown (in a Sheet Named "Dropdown"):** In cell **A1**, I created a category dropdown using Data Validation, referencing the **category** named range.

**C: Product Dropdown (in another Sheet named "Filtered"):** In a separate sheet, I used the FILTER function to dynamically list products based on the selected category:  
**=FILTER(product\_name, category=Dropdown!A2)**

I named this filtered range **product\_name\_filtered**. Then, I applied Data Validation to create a dropdown based on the **product\_name\_filtered** range.

**D: Retrieving Unit Price:** I used the **INDEX MATCH** formula to retrieve the unit price:

**=INDEX(unit\_price, MATCH((category=A2)\*(product\_name=B2), 0))**

This formula returned the unit price based on the selected category and product.

**Result: The correct unit price is retrieved for the selected product and category.**

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## Additional

### 1. **Dashboard** for Total Sales, Profit, and Average Discount by Region

Using a combination of functions and conditional formatting, I created a dashboard to visualize each region's total sales, profit, and average discount.

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**2. Dashboard:** This sheet shows each **Category's and Subcategory's monthly** sales, profit, and profit margin.

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**3. Dashboard/Chart:** This sheet is **Dynamically** connected to the selected **Year** and includes: **A profit histogram, Top 5** profitable subcategories, **Bottom 5** profitable subcategories, **Top 10** profitable customers, **Bottom 10** profitable customers, **Sum of positive profit, Sum of negative profit, and the Number of distinct orders.**

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