|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ProductId** | **Product** | **Category** | **Jan Sales** | **Feb Sales** | **Mar Sales** | **Apr Sales** | **May Sales** |
| **101** | **PRODA** | **Electronics** | **120** | **130** | **140** | **150** | **160** |
| **102** | **PRODB** | **Furniture** | **150** | **160** | **170** | **180** | **190** |
| **103** | **PRODC** | **Electronics** | **200** | **210** | **220** | **230** | **240** |
| **104** | **PRODD** | **Clothing** | **90** | **110** | **110** | **120** | **130** |
| **105** | **PRODE** | **Furniture** | **220** | **230** | **240** | **250** | **260** |
| **106** | **PRODF** | **Electronics** | **130** | **140** | **140** | **160** | **170** |

**Index and Match lab**

**Name-Dhananjay pandit**

**1.Use INDEX and MATCH to find the sales for Product C in March.**

* **Goal**: Find the March sales for "PRODC."
* **Steps**:
  1. Use the MATCH function to locate the row for "PRODC" in column **C**.
  2. Use the INDEX function to pull the value from column **G** (March Sales) corresponding to the matched row.
* **Formula**:

=INDEX(G22:G27, MATCH("PRODC", C22:C27, 0))

* 1. G22:G27 → Range for March Sales.
  2. MATCH("PRODC", C22:C27, 0) → Finds the row number where "PRODC" exists.

|  |  |
| --- | --- |
| Product | Mar Sales |
| PRODC | 220 |

**2. Use INDEX and MATCH to find the category for Product E.**

* **Goal**: Find the category for "PRODE."
* **Steps**:
  1. Use the MATCH function to locate the row for "PRODE" in column **C**.
  2. Use the INDEX function to return the value from column **D** (Category).
* **Formula**:

=INDEX(D22:D27, MATCH("PRODE", C22:C27, 0))

* 1. D22:D27 → Range for Category.
  2. MATCH("PRODE", C22:C27, 0) → Finds the row for "PRODE."

|  |  |
| --- | --- |
| Product | Category |
| PRODE | Furniture |

**3. Use INDEX and MATCH to find the maximum sales for Product B across all months.**

* **Goal**: Find the highest sales for "PRODB" (across Jan-May).
* **Steps**:
  1. Use the MATCH function to find the row for "PRODB" in column **C**.
  2. Use the INDEX function to get all sales values for that row across columns **E** to **I**.
  3. Use the MAX function to get the maximum sales.
* **Formula**:

=MAX(INDEX(E22:I27, MATCH("PRODB", C22:C27, 0), 0))

* 1. E22:I27 → Range for all sales data.
  2. MATCH("PRODB", C22:C27, 0) → Finds the row for "PRODB."
  3. INDEX(..., ..., 0) → Returns the entire row for the product.

|  |  |
| --- | --- |
| Product | Maximum sale |
| PRODB | 190 |

**4. Use INDEX and MATCH to find the month with the maximum sales for Product A.**

* **Goal**: Find the month with the highest sales for "PRODA."
* **Steps**:
  1. Use the MATCH function to locate the row for "PRODA."
  2. Use the INDEX function to get all sales data for that row (columns **E** to **I**).
  3. Use the MATCH and MAX functions to determine the column where the maximum sales occur.
  4. Return the header (month) using INDEX.
* **Formula**:

=INDEX(E21:I21, MATCH(MAX(INDEX(E22:I27, MATCH("PRODA", C22:C27, 0), 0)), INDEX(E22:I27, MATCH("PRODA", C22:C27, 0), 0), 0))

* 1. E21:I21 → Header row (months).
  2. MATCH(MAX(...), ...) → Finds the position of the maximum value.

|  |  |
| --- | --- |
| Product | Month |
| PRODE | May Sales |

**5. Use INDEX, MATCH, and SUMIF to sum the sales for all products in the "Electronics" category for April.**

* **Goal**: Sum the April sales for all products categorized as "Electronics."
* **Steps**:
  1. Use SUMIF to filter based on "Electronics" in column **D**.
  2. Sum the values in column **H** (April Sales).
* **Formula**:

=SUMIF(D22:D27, "Electronics", H22:H27)

* 1. D22:D27 → Category column.
  2. "Electronics" → Condition.
  3. H22:H27 → April Sales.

|  |  |
| --- | --- |
| Product category | Sum sales |
| electronics | 540 |

**6. Use INDEX and MATCH to calculate the average sales for Product D across all months.**

* **Goal**: Find the average of all sales for "PRODD" (columns **E** to **I**).
* **Steps**:
  1. Use MATCH to find the row for "PRODD."
  2. Use INDEX to fetch the row's sales data (columns **E** to **I**).
  3. Use AVERAGE to calculate the average.
* **Formula**:

=AVERAGE(INDEX(E22:I27, MATCH("PRODD", C22:C27, 0), 0))

* 1. E22:I27 → Sales range.
  2. MATCH("PRODD", C22:C27, 0) → Finds the row.
  3. INDEX(..., ..., 0) → Returns all monthly sales.

|  |  |
| --- | --- |
| Product | Avg sales |
| PRODD | 112 |

**7. Use INDEX and MATCH to find the sales for Product ID 105 in May.**

* **Goal**: Get May sales for Product ID 105.
* **Steps**:
  1. Use MATCH to find the row for Product ID 105 in column **B**.
  2. Use INDEX to pull the value from column **I** (May Sales).
* **Formula**:

=INDEX(I22:I27, MATCH(105, B22:B27, 0))

* 1. I22:I27 → May Sales range.
  2. MATCH(105, B22:B27, 0) → Finds the row for ID 105.

|  |  |  |
| --- | --- | --- |
| Product id | Month | Sales |
| 104 | May Sales | 130 |

**8. Use INDEX and MATCH to create a dynamic lookup where the user can input a product and a month, and the formula returns the corresponding sales.**

* **Goal**: Create a dynamic lookup for product and month input.
* **Steps**:
  1. Assume:
     + Product input is in cell L1 (e.g., "PRODA").
     + Month input is in cell L2 (e.g., "Mar Sales").
  2. Use MATCH to locate the row for the product in column **C**.
  3. Use MATCH to find the column for the selected month in row **21**.
  4. Use INDEX to pull the value.
* **Formula**:

=INDEX(E22:I27, MATCH(L1, C22:C27, 0), MATCH(L2, E21:I21, 0))

* 1. L1 → Product input.
  2. L2 → Month input.
  3. E22:I27 → Sales data.
  4. MATCH(L1, C22:C27, 0) → Row match for product.
  5. MATCH(L2, E21:I21, 0) → Column match for month.

|  |  |  |
| --- | --- | --- |
| Product | Month | Sales |
| PRODA | Mar Sales | 140 |