1. Perform Basic Operations on Dataset in Excel

Aim: Perform calculations and sorting on a dataset in Excel.

Procedure:

1. **Enter Dataset**:
   - Enter the numbers 56, 43, 24, 67, 87, 45, 69, 97, 54, 24, 45, 68, 85, 14, 10, 92 in column A.
2. **Formulas**:
   - **Highest Score**: =MAX(A1:A16).
   - **Lowest Score**: =MIN(A1:A16).
   - **Average Score**: =AVERAGE(A1:A16).
   - **Total Sum**: =SUM(A1:A16).
   - **Square Root of Total**: =SQRT(SUM(A1:A16)).
3. **Sort in Ascending Order**:
   - Select the column.
   - Go to **Data > Sort** and choose ascending order.
   - Copy the sorted values to column B.

Algorithm:

1. Input data in column A.
2. Use MAX, MIN, AVERAGE, and SUM to calculate required metrics.
3. Sort data in ascending order and paste results in column B.
4. Calculate the square root of the sum using SQRT.

2. Statistical Analysis

Aim: Calculate statistical metrics and represent data as a histogram.

Procedure:

1. **Enter Dataset**:
   - Input values 164, 153, 102, 75, 268, 86, 17, 75, 187, 178, 198, 187, 94 in column A.
2. **Formulas**:
   - **Mean**: =AVERAGE(A1:A13).
   - **Median**: =MEDIAN(A1:A13).
   - **Mode**: =MODE.SNGL(A1:A13).
   - **Standard Deviation**: =STDEV.S(A1:A13).
   - **Variance**: =VAR.S(A1:A13).
   - **Skewness**: =SKEW(A1:A13).
   - **Kurtosis**: =KURT(A1:A13).
3. **Create Histogram**:
   - Go to **Insert > Charts > Histogram**.

Algorithm:

1. Input data in column A.
2. Apply statistical functions in separate cells.

3. Create a histogram using chart tools.

3. Import and Export in Excel

Aim: Transfer data between workbooks and export it in various formats.

Procedure:

1. **Import Worksheet**:
   - Open both workbooks.
   - Right-click on the sheet tab > **Move or Copy** > Select target workbook > **OK**.
2. **Export to CSV**:
   - Click **File > Save As** and choose **CSV (Comma delimited)**.
3. **Export with Custom Delimiters**:
   - Use **Power Query**:
     - Go to **Data > Get & Transform**.
     - Save as a CSV with a custom delimiter.

Algorithm:

1. Use the **Move/Copy** option for importing.
2. Export data via **Save As** or Power Query.

4. Normalize Data

Aim: Normalize student height data and format it.

Procedure:

1. **Enter Data**:
   - Input the heights of students in column A.
2. **Normalize**:
   - Formula: (Value - MIN(A1:A10)) / (MAX(A1:A10) - MIN(A1:A10)).
3. **Format**:
   - Select the normalized column.
   - Apply bold text and red color formatting.

Algorithm:

1. Input height data in column A.
2. Normalize each value using the formula.
3. Format the results.

5. Bivariate and Multivariate Analysis

Aim: Analyze the relationship between variables using scatterplots, correlation, and regression.

Procedure:

1. **Input Data**:
   - Enter **Hours** in column A and **Scores** in column B.
2. **Correlation**:
   - Use =CORREL(A1:A18, B1:B18).
3. **Regression**:
   - Use the **Data Analysis Toolpack** > Regression.
4. **Scatterplot**:
   - Go to **Insert > Charts > Scatterplot**.

Algorithm:

1. Input data in two columns.
2. Calculate correlation and regression.
3. Visualize data with a scatterplot.

6. Prepare Data in Power BI Desktop

Aim: Set up Power BI Desktop for data import.

Procedure:

1. **Set Options**:
   - Go to **File > Options** and configure settings.
2. **Import Data**:
   - Use **Home > Get Data** for SQL Server and CSV files.
3. **Load Data**:
   - Review and load data into the model.

Algorithm:

1. Set Power BI options.
2. Import and load data from various sources.

7. Apply Data Transformations

Aim: Clean and transform data.

Procedure:

1. **Open Power Query**:
   - Use **Transform Data**.
2. **Clean Data**:
   - Remove duplicates and filter rows.
3. **Transform Data**:
   - Add calculated columns and split data as needed.

Algorithm:

1. Open Power Query Editor.

2. Perform cleaning and transformations.
3. Apply changes to load the data model.

8. Configure Many-to-Many Relationships

Aim: Create relationships between tables.

Procedure:

1. **Model View**:
   o Go to the **Model** tab.
2. **Establish Relationships**:
   o Drag fields between tables.
3. **Set Cross-Filtering**:
   o Use **Cross-filter direction > Both**.

Algorithm:

1. Open model view.
2. Link tables with many-to-many relationships.

9. Create Sales Exploration Report

Aim: Build a sales report.

Procedure:

1. Add **Scatter Charts**:
   o Drag fields to axes.
2. Add **Forecasting**:
   o Use **Analytics > Forecast**.
3. Use **Key Influencers**Visual:
   o Drag fields into the influencer visual.

Algorithm:

1. Add visuals to the canvas.
2. Enable forecasting and add influencers.

10. Enforce Row-Level Security in Power BI Desktop

Aim: Ensure that salespeople can only view sales data specific to their assigned regions.

Procedure:

1. **Define Roles**:
   o Go to **Modeling > Manage Roles**.
   o Click **Create** and name the role (e.g., "Salesperson").
   o Write a DAX filter, e.g., [Region] = "North" to filter data for the North region.
2. **Test Security**:

- o Use **Modeling > View As Roles**.
- o Select the role to validate the filtered data.
3. **Publish and Assign Users**:
    - o Publish the Power BI report to Power BI Service.
    - o Go to the dataset and assign users to the role under **Security**.

Algorithm:

1. Create roles and define DAX filters.
2. Validate roles in Power BI Desktop.
3. Publish the report and assign roles to users.

11. Format Excel Sheet with a Welcome Message and Average Calculation

Aim: Add a welcome message, calculate the average, and round values in Excel.

Procedure:

1. **Add Welcome Message**:
    - o Enter "Welcome" in cell A1.
    - o Format it:
        - ▪ Font: Arial.
        - ▪ Bold: Enabled.
        - ▪ Background Color: Blue.
2. **Calculate Average**:
    - o Input values 10, 20, 30, 40, 50, 60 in cells A2:A7.
    - o In cell B1, enter =AVERAGE(A2:A7).
3. **Round Average**:
    - o In cell B2, enter =ROUND(B1, 0).

Algorithm:

1. Enter and format a welcome message.
2. Calculate the average using AVERAGE().
3. Round the result using ROUND().

12. Design Advanced Power BI Report

Aim: Create a report with advanced features like sync slicers, drillthrough pages, conditional formatting, and bookmarks.

Procedure:

1. **Sync Slicers**:
    - o Add slicers to multiple pages.
    - o Use the **View > Sync Slicers** feature to connect them.
2. **Drillthrough Pages**:
    - o Create a detailed page and enable **Drillthrough**.
    - o Drag a field (e.g., Region) into the drillthrough filter pane.

3. **Conditional Formatting**:
   - Apply formatting to visuals by going to **Format > Data Colors** and adding rules.
4. **Bookmarks**:
   - Save states using **View > Bookmarks**.
   - Assign bookmarks to buttons for navigation.

Algorithm:

1. Add slicers and sync them across pages.
2. Set up drillthrough filters.
3. Use conditional formatting and save bookmarks.

13. Perform Z-Test and T-Test in Excel

Aim: Conduct Z-Test and T-Test on datasets in Excel.

Procedure:

1. **Input Data**:
   - Enter **Data1**: 5, 6, 9, 12, 16.
   - Enter **Data2**: 9, 19, 3, 15, 14.
2. **Perform Z-Test**:
   - Use =Z.TEST(Data1, Mean) where "Mean" is the population mean.
3. **Perform T-Test**:
   - Use =T.TEST(Data1, Data2, tails, type)where:
     - tails = 1 or 2 (one-tailed or two-tailed test).
     - type = 1, 2, or 3 (paired, two-sample equal variance, or unequal variance).

Algorithm:

1. Input the datasets.
2. Use Z.TEST() for Z-Test.
3. Use T.TEST() for T-Test.

14. Create a Student Mark Sheet in Excel

Aim: Design a mark sheet with total, average, grade, and remarks.

Procedure:

1. **Input Data**:
   - Enter student names and marks for five subjects.
2. **Calculate Total**:
   - Use =SUM(B2:F2) for total marks.
3. **Calculate Average**:
   - Use =AVERAGE(B2:F2) for average marks.
4. **Assign Grades**:
   - Use =IF(Avg >= 90, "A", IF(Avg >= 75, "B", IF(Avg >= 50, "C", "D"))).
5. **Add Remarks**:

- Use =IF(Grade = "A", "Excellent", IF(Grade = "B", "Good", "Needs Improvement")).

Algorithm:

1. Input marks for each student.
2. Compute totals, averages, and grades.
3. Generate remarks based on grades.

15. Create Sales Monitoring Dashboard in Power BI

Aim: Create an interactive sales dashboard with pinned visuals and alerts.

Procedure:

1. **Add Visuals**:
   - Include charts like bar, pie, or line charts.
2. **Pin Visuals**:
   - Right-click on visuals and select **Pin to Dashboard**.
3. **Use Q&A**:
   - Enable **Q&A** to create visuals dynamically based on questions.
4. **Configure Alerts**:
   - Go to Power BI Service and set thresholds for tile alerts.

Algorithm:

1. Add and pin visuals to the dashboard.
2. Use Q&A to enhance the dashboard.
3. Set up alerts for data thresholds.

16. Create Calculated Tables, Columns, and Measures Using DAX

Aim: Use DAX to create calculated fields for advanced analytics.

Procedure:

1. **Create Calculated Table**:
   - Use New Table and enter DAX formula (e.g., SUMMARIZE(Table, "Total Sales", SUM(Table[Sales]))).
2. **Add Calculated Columns**:
   - Create new columns using New Column and add DAX formulas (e.g., [Profit] = [Revenue] - [Cost]).
3. **Create Measures**:
   - Use New Measure and define expressions like Total Sales = SUM(Table[Sales]).

Algorithm:

1. Define calculated tables using SUMMARIZE.
2. Add columns for computed metrics.
3. Create measures for key calculations.

17. Design and Publish Power BI Report

Aim: Design a multi-page report and publish it to Power BI Service.

Procedure:

1. **Create Pages**:
   - Add multiple report pages with visuals.
2. **Customize Design**:
   - Add slicers, filters, and conditional formatting.
3. **Publish Report**:
   - Click **Home > Publish** and select a workspace.

Algorithm:

1. Create multi-page reports with visuals.
2. Customize pages with advanced features.
3. Publish the report online.

18. Create Relationships and Configure Properties in Power BI

Aim: Enhance data usability with relationships and table configurations.

Procedure:

1. **Define Relationships**:
   - Use **Model View** to drag fields between tables.
2. **Configure Properties**:
   - Rename tables/columns and hide unnecessary fields.
   - Set default aggregations (e.g., sum or average).

Algorithm:

1. Link tables using appropriate fields.
2. Configure column and table properties.

19. Create Measures with Advanced DAX Functions

Aim: Create complex measures using CALCULATE and Time Intelligence functions.

Procedure:

1. **Define Measures**:
   - Use CALCULATE for conditional aggregations (e.g., Total Sales = CALCULATE(SUM(Table[Sales]), Table[Region] = "North")).
2. **Use Time Intelligence**:
   - Create measures like:
     - Yearly Sales = TOTALYTD(SUM(Sales[Amount]), Date[Date]).

Algorithm:

1. Use CALCULATE for custom filters.
2. Apply Time Intelligence functions for date-specific analysis.