**(1)Step 1: Enter Data in Excel**

Open **Microsoft Excel**.

Enter the **subject names and marks** into the sheet like this:

**Step 2: Calculate Total Marks**

Click on **B6** and enter this formula:

SUM(B2:B5)

Press **Enter** → This will calculate the **Total Marks**.

Step 3: Calculate Average Marks

=AVERAGE(B2:B5)

Press **Enter** → This will calculate the **Average Marks**.

Step 4: Perform What-If Analysis (Data Table)

**We will check how different marks in Subject 4 affect the Total Marks.**

**Setting Up a What-If Table**

In **D1**, type "Subject 4 Marks".

Below it, enter different possible values for Subject 4:

In **E1**, type "Total Marks" (for results).

In **E2**, enter this formula to calculate the new Total Marks:

=B2+B3+B4+D2

Drag the formula down **from E2 to E7**.

**Using What-If Analysis (Data Table)**

Select **D1:E7** (including headers).

Click on **Data → What-If Analysis → Data Table**.

In **Column Input Cell**, select **B5** (Subject 4 marks).

Click **OK** → It will fill the Total Marks for each Subject 4 value.

**Now, you can see how changing Subject 4’s marks affects the total!**

**Step 5: Use Goal Seek to Find Minimum Marks for Average 80**

Now, we will calculate the **minimum marks in Subject 4** required to get an **average of 80**.

**➡Steps for Goal Seek**

Click on **B7** (where the Average Marks is calculated).

Go to **Data → What-If Analysis → Goal Seek**.

In the **Goal Seek window**, enter:

**Set cell:** B7 (the Average Marks).

**To value:** 80 (we want the average to be 80).

**By changing cell:** B5 (the Subject 4 marks).

Click **OK**.

**Excel will now calculate the required marks in Subject 4 to achieve an average of 80!**

**(2)Import Data & Create Pivot Table & Pivot Chart in Excel**

* **Import data from an external source.**
* **Create a Pivot Table to analyze data.**
* **Generate a Pivot Chart to visualize the data.**

**Step 1: Download the Dataset**

**Click on this link to download the Excel file:  
🔗** [**Products.xlsx**](https://github.com/LEARNEREA/Excel_Files/blob/master/Products.xlsx)

**Open the file in Microsoft Excel.**

**Step 2: Import Data into Excel**

1. **If using a new sheet:**
   * **Open a blank Excel workbook.**
   * **Go to Data → Get Data → From File → From Workbook.**
   * **Select the downloaded Products.xlsx file.**
   * **Click Import → Load Data into Excel.**

**We can see data has been properly loaded into our excel sheet.**

**Insert -> PivotChart**

**Select Use an External Data Source and Choose Connection and click Ok.**

**You will be able to see PivotTable and PivotChart boxes as shown**

Now, just select the fields from the list present on right side and you will able to see that Chart starts getting build.

Go to the Chart Design tab.• Select Add Chart Element → Chart Title → Above Chart. • Click on the default title and type something descriptive, e.g., "Summary of Data Warehouse Metrics". • Add Chart Element → Axis Titles. Choose Primary Horizontal for the X-axis and Primary Vertical for the Y-axis. [ X-axis: Metrics , Y-axis: Values ] • Select the header in your pivot table, e.g., "Sum of CategoryID". • Click on it and rename it to a more descriptive term, such as "Total Categories". Repeat this for all headers.

(3)**Step 1: Enter Data in Excel**

Open **Excel** and enter the data:

**Step 2: Calculate Total Marks**

Click on **B6** and enter this formula: =SUM(B2:B5) Press **Enter** → This will calculate the **Total Marks**.

**Step 3: Calculate Average Marks**

Click on **B7** and enter this formula: =AVERAGE(B2:B5) Press **Enter** → This will calculate the **Average Marks**.

**Step 4: Perform What-If Analysis (Data Table)**

**We will check how different marks in Subject 4 affect the Total Marks.**

**Setting Up a What-If Table**

In **D1**, type "Subject 4 Marks".

Below it, enter different possible values for Subject 4:

In **E1**, type "Total Marks" (for results).

In **E2**, enter this formula to calculate the new Total Marks: =B2+B3+B4+D2

Drag the formula down **from E2 to E7**.

**Using What-If Analysis (Data Table)**

Select **D1:E7** (including headers).

Click on **Data → What-If Analysis → Data Table**.

In **Column Input Cell**, select **B5** (Subject 4 marks).

Click **OK** → It will fill the Total Marks for each Subject 4 value.

**Now, you can see how changing Subject 4’s marks affects the total!**

**Step 5: Use Goal Seek to Find Minimum Marks for Average 80**

Now, we will calculate the **minimum marks in Subject 4** required to get an **average of 80**.

**Steps for Goal Seek**

1. Click on **B7** (where the Average Marks is calculated).
2. Go to **Data → What-If Analysis → Goal Seek**.
3. In the **Goal Seek window**, enter:

**Set cell:** B7 (the Average Marks).

**To value:** 80 (we want the average to be 80).

**By changing cell:** B5 (the Subject 4 marks).

Click **OK**.

**Excel will now calculate the required marks in Subject 4 to achieve an average of 80!**

**Final Answer**

**What-If Analysis** shows how different Subject 4 marks affect total.

**Goal Seek** finds the **minimum Subject 4 marks required** for an **80 average**.

(4) **Step 1: Enter Data in Excel**

1. Open **Microsoft Excel**.
2. Enter the **student marks** dataset in **columns A, B, and C**, like this:

**Step 2: Insert a Pivot Table**

1. Select the **entire dataset** (A1:C13).
2. Click on **Insert → PivotTable**.
3. In the **PivotTable window**, select:
   * **Choose the data range:** It should auto-select A1:C13.
   * **Choose where to place the Pivot Table:** Select **New Worksheet**.
4. Click **OK** → A blank **Pivot Table** is created.

**Step 3: Set Up the Pivot Table**

1. In the **PivotTable Fields Panel**, drag:
   * **"Subject"** to **Rows**.
   * **"Marks"** to **Values** (it should display **Average Marks**).
   * **"Student"** to **Filters** (to filter by individual students).

✅ **Now your Pivot Table shows the average marks per subject!**

**Step 4: Apply Filters to Check Individual Student Performance**

1. Click on the **Student Filter (Drop-down Menu)** in the Pivot Table.
2. Select a specific student (e.g., **Aarav**) to see only their marks.
3. Click **OK** → The table will now show **only Aarav’s marks**.

**Step 5: Create a Pivot Chart**

1. Click inside the **Pivot Table**.
2. Go to **Insert → Charts → Column Chart / Bar Chart**.
3. Choose a **Clustered Column Chart** or **Bar Chart**.
4. Click **OK** → Your **Pivot Chart** is now ready!

**Step 6: Customize the Pivot Chart (Optional)**

* Click on the **Chart Title** and rename it (e.g., "Average Marks Per Subject").
* Right-click on the chart to change **styles, colors, and labels**.

**Final Answer**

* **Pivot Table**: Displays **average marks per subject**.
* **Pivot Chart**: Visually compares marks across subjects.
* **Filters**: Allow checking **individual student performance**.

**(5)**

c(799,1174.8,865.1,1134.6,635.4,918.5,685.5,998.6,784.2,985,882.8,1071)

rainfall <- c(799,1174.8,865.1,1134.6,635.4,918.5,685.5,998.6,784.2,985,882.8,1071)

rainfall.timeseries <-ts(rainfall, start = c(2012,1),frequency=12)

print(rainfall.timeseries)

png(file="rainfall.png")

plot(rainfall.timeseries) , dev.off()

**(6)Logistic regression**

view(mtcars)

ls()

data(“mtcars”)

model <- glm(formula =vs ~ wt + disp, data = mtcars,family = "binomial")

model

summary(model)

newdata <- data.frame(wt=2.1, disp = 180)

predict(model,newdata, type = "response")

head(mtcars)

**(7)Linear regression**

x <- c(151,1774,138,186,128,136,179,163,152,131)

y <- c(63,81,56,91,47,57,76,72,62,48)

relation <- lm(y~x)

print(relation)

print(summary(relation))

a <- data.frame(x=170)

result <- predict(relation,a)

print(result)

png(file = "linearregression.png")

plot(x, y,col = "blue",main = "Height & width Regression",

abline(lm(x~y)), cex=1.3,pch=16, xlab="weight in kg",ylab="Height in cm")

dev.off()

**(8)** **dataclustering(k-means)**

head(iris)

kc <- kmeans(iris[, 1:4], centers = 3)

table(iris$Species, kc$cluster)

plot(iris[c("Sepal.Length", "Sepal.Width")], col = kc$cluster)

points(kc$centers[, c("Sepal.Length", "Sepal.Width")], col = 1:3, pch = 8,cex = 2)