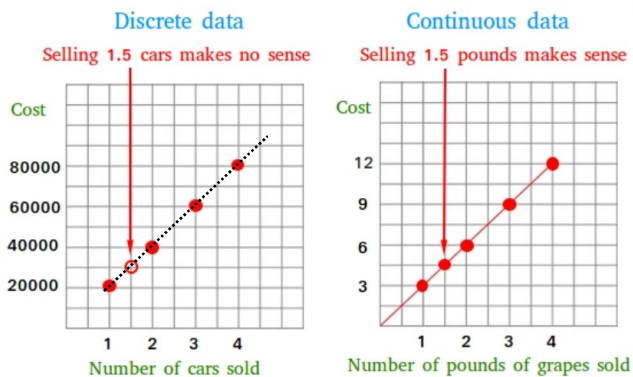
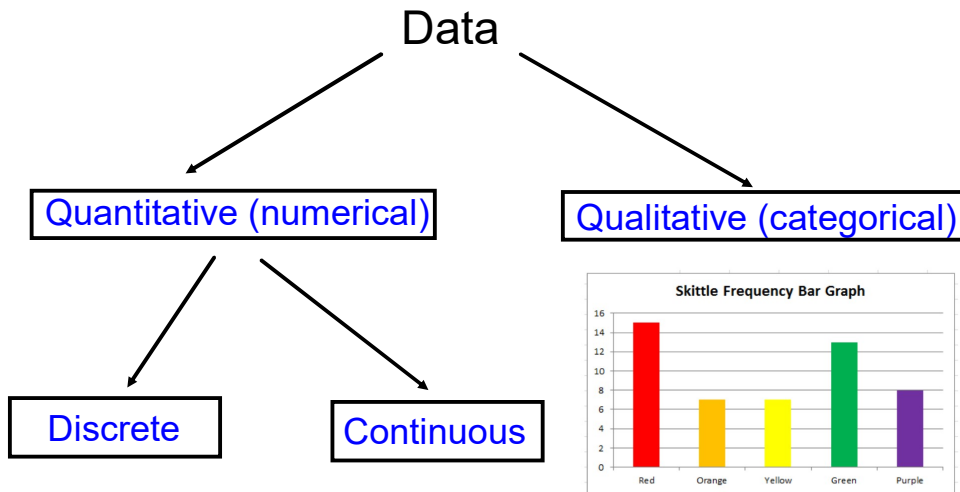


3.3 - Displaying Data using Technology

Data: a collection of facts such as numbers, words, measurements, observations or just descriptions of things



Organizing Data

Frequency Tables: best way to organize categorical data

Colour of cars in the school carpark

Colour	Frequency
white	14
red	2
blue	3
black	1
yellow	1

Grouped Frequency Tables: best for continuous data

Height of year 9 students

Height (cm)	Frequency
145 – 150	3
150 – 155	10
155 – 160	8
160 – 165	13
165 – 170	1

Displaying Data

The display of data will depend on the type of data and the purpose of the investigation.

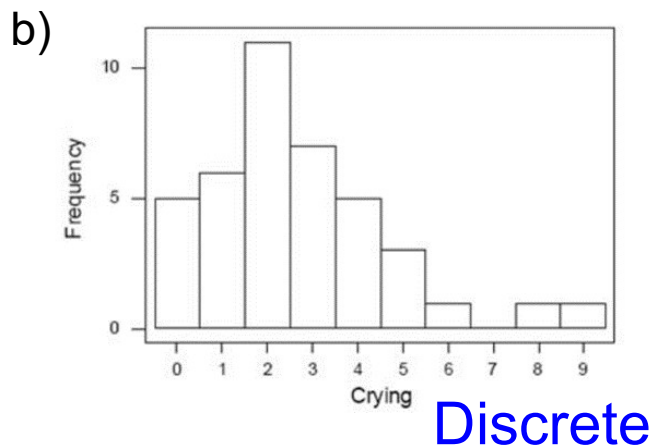
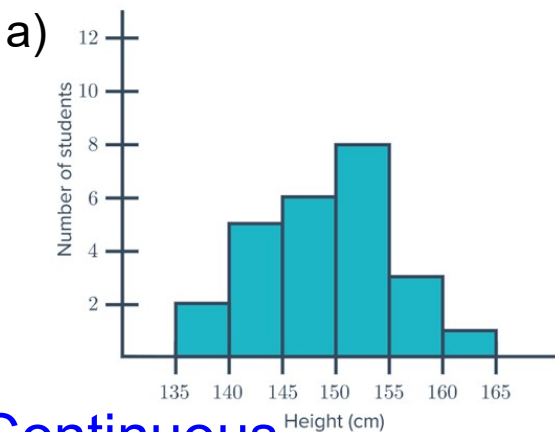
Common ways of displaying statistical data:

1. Histograms
2. Bar Graphs
3. Box-and-Whisker Plots
4. Scatter Plots (used for two variable data)

1) Histogram

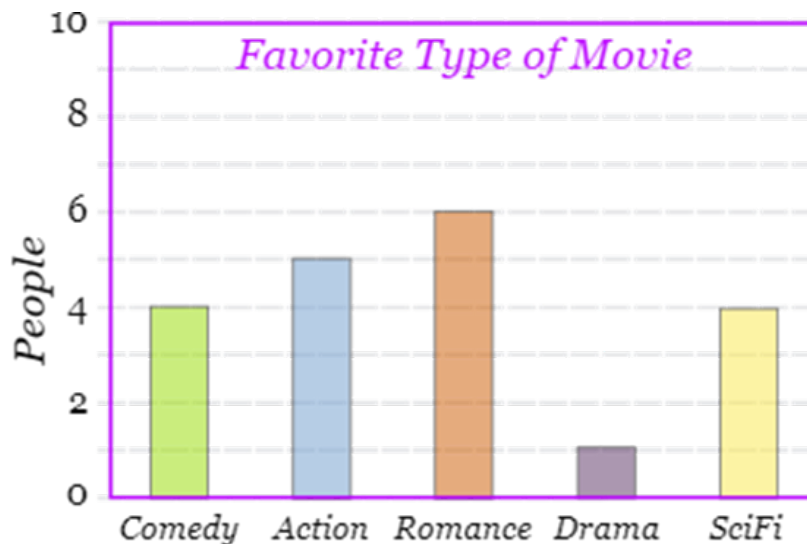
- Displayed as vertical columns
- Used to represent numerical data (discrete and continuous)
- Does NOT have spaces between columns

Ex. Are the following histograms displaying discrete or continuous data?

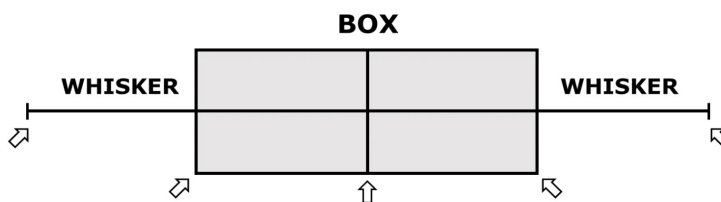


2) Bar Graphs

- Displays categorical data
- Can be vertical or horizontal columns
- Has spaces between bars

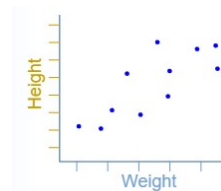


3) Box-and-Whisker Plots (from Lesson 3.1)



4) Scatter Plots (from Lesson 3.2)

- Displays two-variable data
- Has an independent variable and a dependent variable
- Shows a trend (positive, negative, none) between two variables



How to Graph using Microsoft Excel

Start by downloading the "EXCEL DATA" link on my website

	A
1	Scores
2	69
3	55
4	61
5	80
6	85
7	70
8	65
9	42
10	74
11	68
12	84
13	51
14	

1) Histograms:

Step 1: Highlight the title "Scores" and all the data

Step 2: In the "Charts" menu, choose "Histogram"

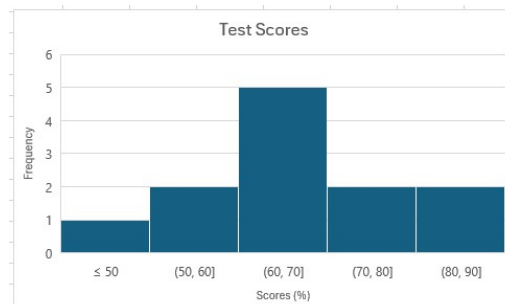
Step 3: Now we tweak it!

Right click on the chart and choose "Format Chart Area"

Step 4: Change Titles

- Enable Axis Titles
- Change **Chart Title** to appropriate title (ie. Test Scores)
- Switch to **Vertical Axis Title**. Change text to "Frequency"
- Switch to **Horizontal Axis Title**. Change text to "Scores (%)"

Your chart should look like this



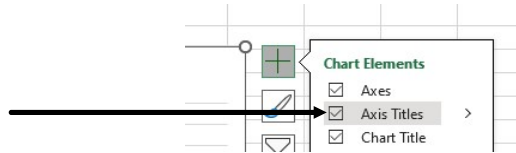


2) Bar Graphs:

Step 1: Highlight the Data (A1 through B5). Go to **Insert**, choose **2-D Column Graph**

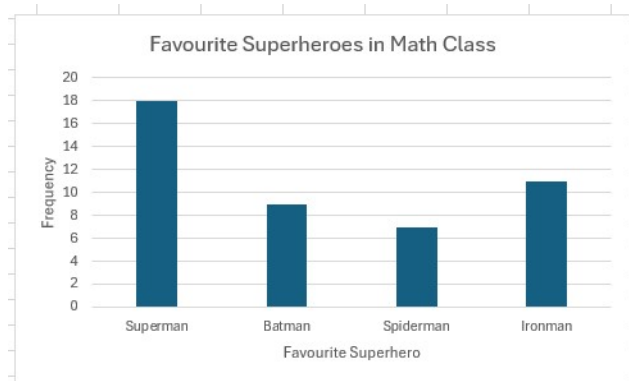


Step 2: Add Axis Titles



Step 3: Change **Chart Title** to an appropriate title (ex. Favourite Superheros in Ms May's Class)

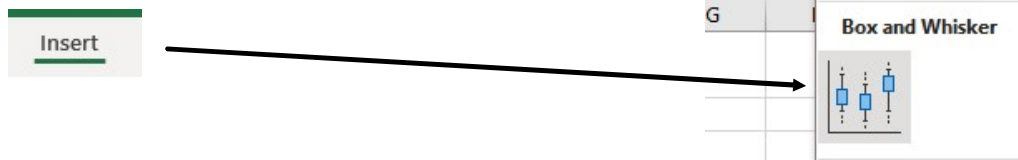
Your chart should look like this



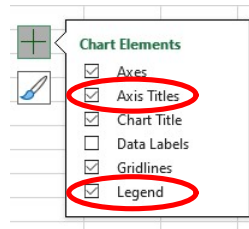


3) Box-and-Whisker Plots

Step 1: Highlight A1 through B9.
Go to **Insert** -> **Box and Whisker**



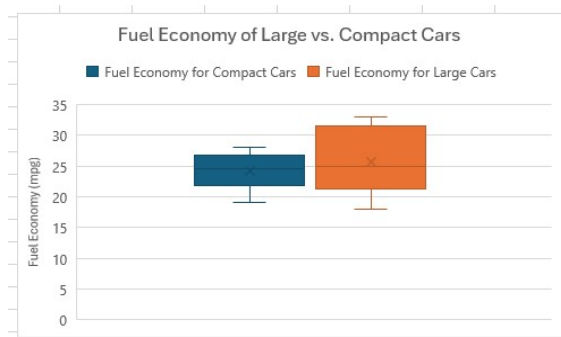
Step 2: Add Axis Titles AND LEGEND



Step 3: Change to appropriate titles:

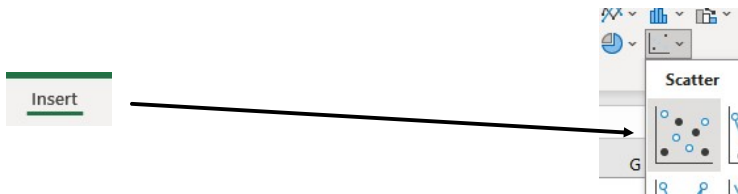
- Change Chart Title to "Fuel Economy of Large vs Compact Cars"
- Change Vertical Axis to "Fuel Economy (mpg)"
- Change Horizontal Axis to "Type of Car"

Your chart should look like this

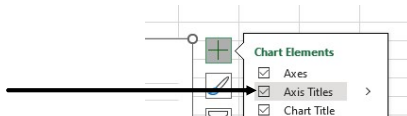


4) Scatter Plots:

Step 1: Highlight A1 through B11.
Go to **Insert -> Chart -> Scatter Chart** (found below Other)

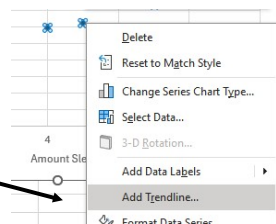


Step 2: Add Axis Titles

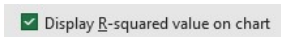


Step 3: Change Chart Title, Horizontal Axis and Vertical Axis to appropriately represent the data.

Step 4: Right-click on any data point and choose "Add Trendline"



Step 5: Click on the box beside **Show R²**.



Step 6: Compare the values for R² between Linear and Exponential to determine which type of Line/Curve of best fit best represents the data.

R² for Linear = 0.78 R² for Exponential = 0.75

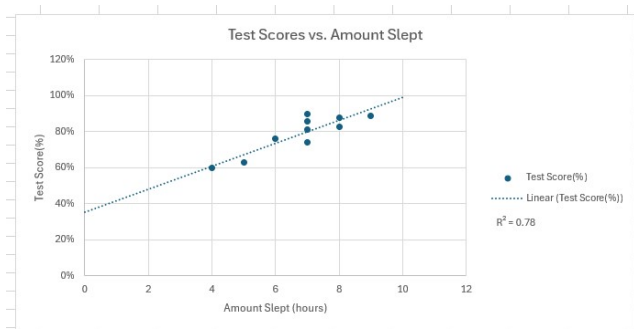
HINT: closer to 1 means a better fit

Which is a better fit?

Step 7: Adjust the forecast forward and backward so we can extrapolate



We can now use our graph to extrapolate/interpolate.



Your chart should look like this

- Graphing Requirements**
- Title
 - Axis labels
 - Axis Scale
 - Legend (if necessary)