

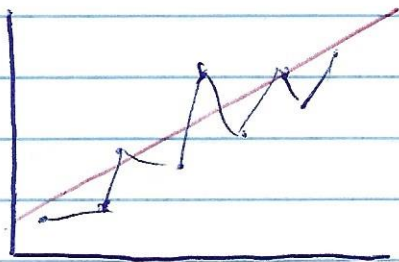
# TIME SERIES.

Time Series data is any data, where the explanatory variable (EV) is time. This could be years, months, days, etc.

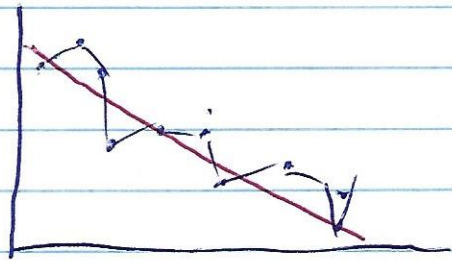
## \* Patterns:

### - Trend

An increase or decrease over time.



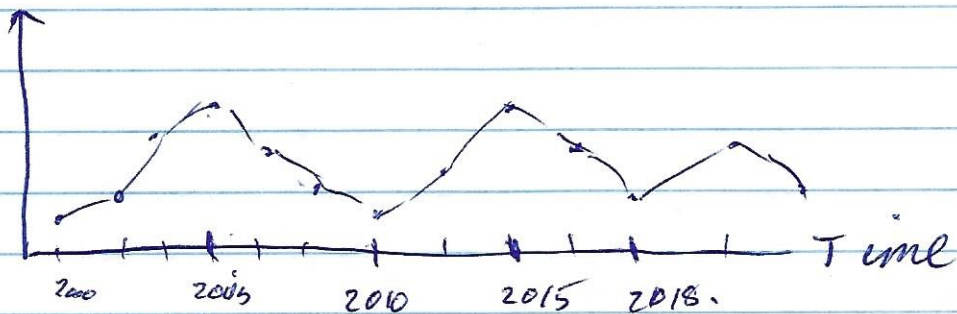
Time  
Increasing Trend



Time  
Decreasing Trend.

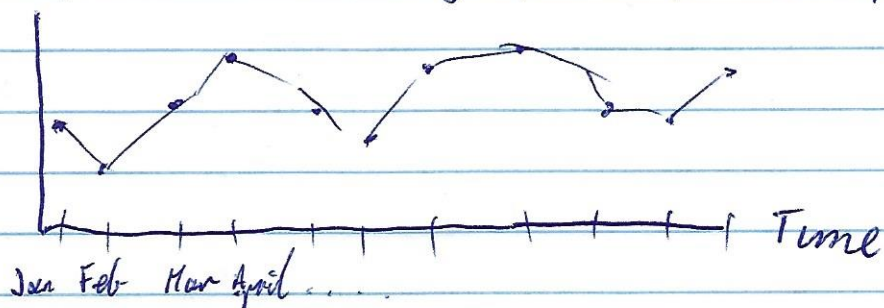
### - Cycles.

Periodic movement, over a period > 1 year.



### - Seasonality

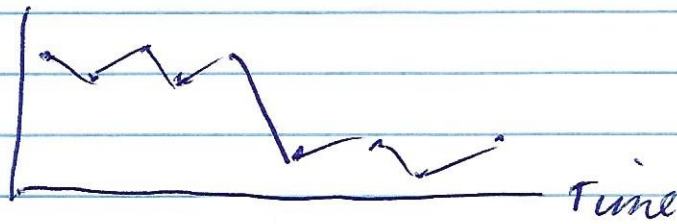
Periodic movement, over shorter period.  
eg month, week, days.



## Structural Change

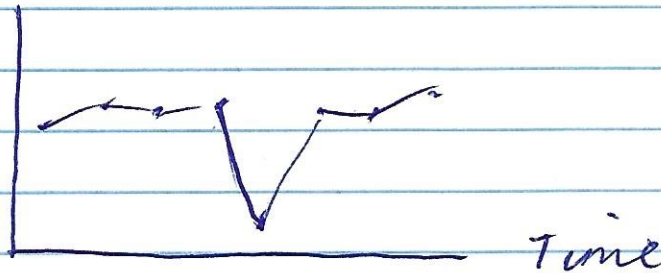
- Structural Change.

A sudden change in the pattern



- Outliers

Individual values that stand out.



- Irregular (Random)

Any variation that cannot be described by the trends above.

Handout: Time Series on the Classpad.

(using example below)

Eg. Construct a time series plot of the data.  
Describe any trends.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rate	3	4	5	3	14	4.5	7	6	7.5	6.5

Often we use 1 for the first year. to make later Calculations easier.

Yr	1	2	3	4	5	6	7	8	9	10
Rate	3	4	5	3	14	4.5	7	6	7.5	6.5

From the Time Series plot we would say that the data has the following:

- Increasing Trend
- An outlier.

Questions: Text Ex 6 A Questions on workplan.