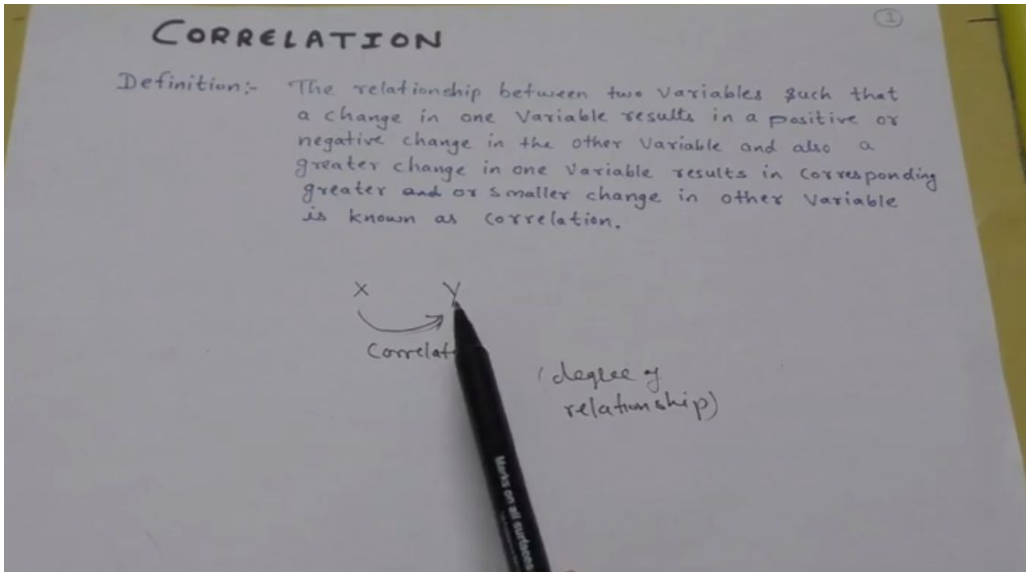
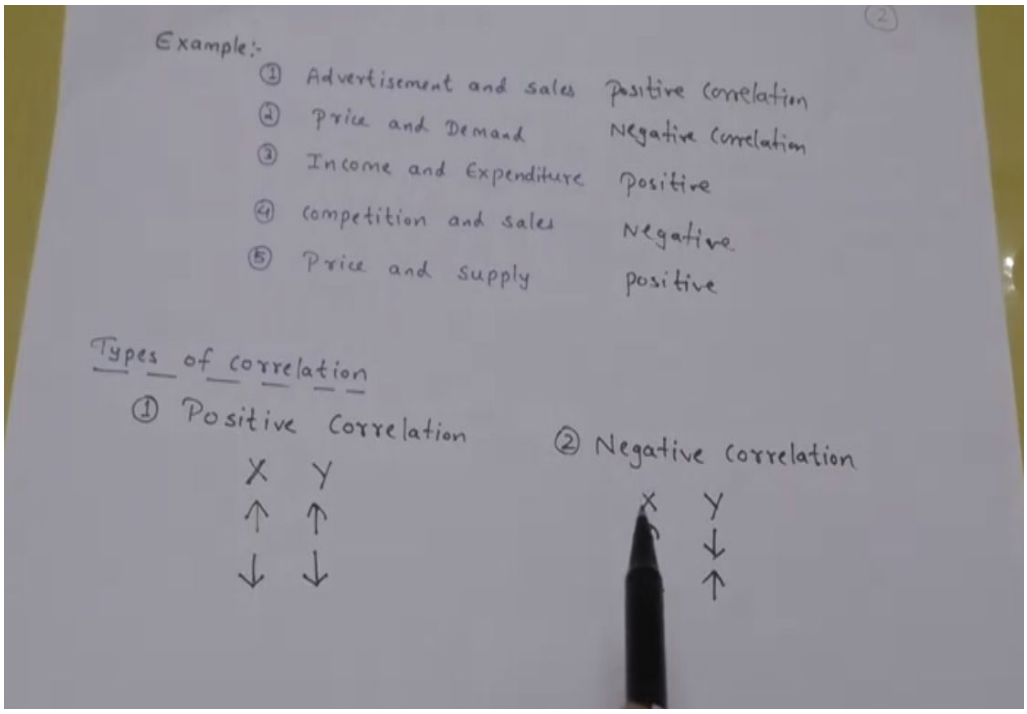
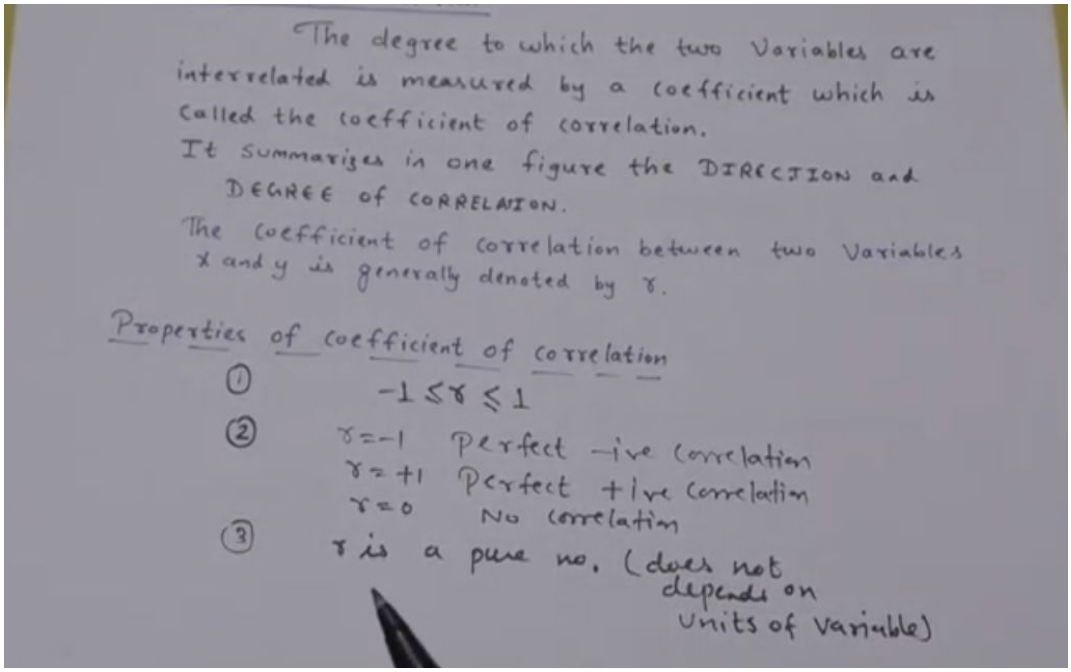

CORRELATION
1
Definition:- The relationship between two variables such that a change in one variable results in a positive or negative change in the other variable and also a greater change in one variable results in corresponding greater and or smaller change in other variable is known as correlation.
X
Y
Correlat
(degree of relationship)


2
Example:-
1 Advertisement and sales Positive correlation
2 Price and Demand Negative correlation
3 Income and Expenditure Positive
4 Competition and sales Negative
5 Price and supply positive
Types of correlation
1 Positive Correlation
X Y
↑ ↑
↓ ↓
2 Negative correlation
X Y
↓
↑



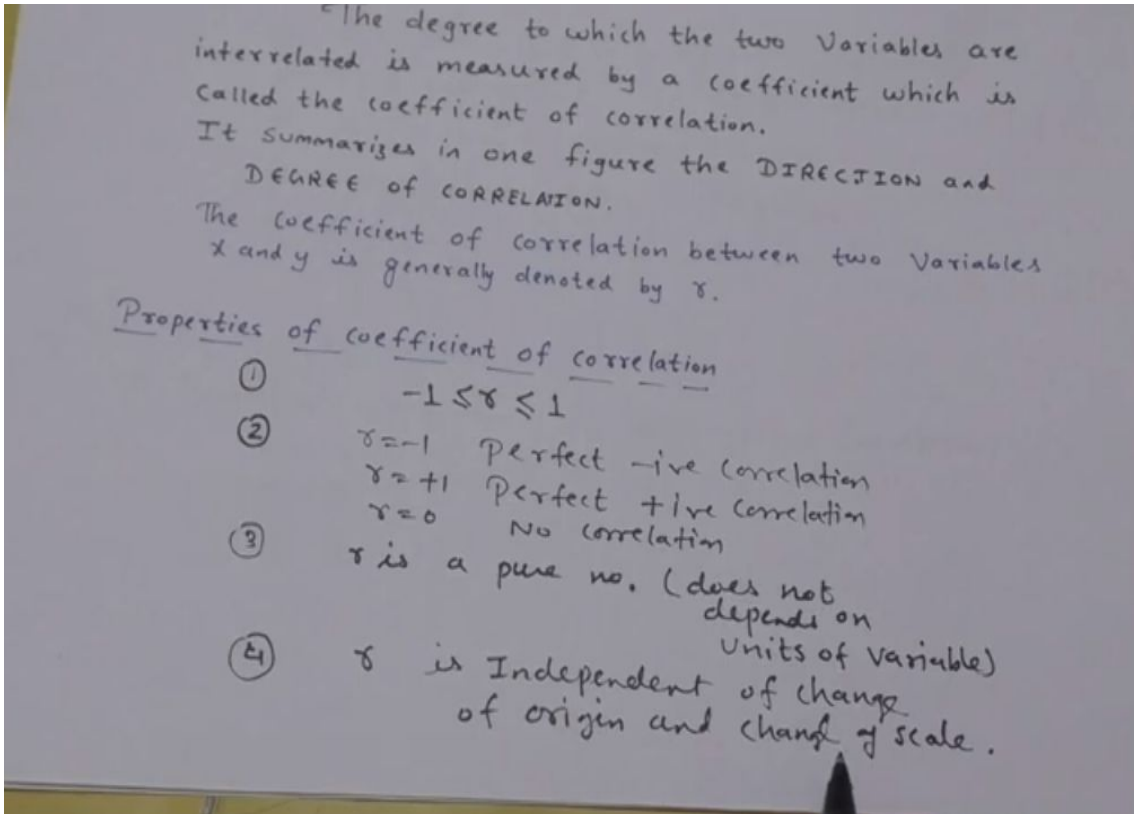
The degree to which the two Variables are interrelated is measured by a coefficient which is called the coefficient of correlation.
It summarizes in one figure the DIRECTION and DEGREE of CORRELATION.
The coefficient of correlation between two Variables x and y is generally denoted by γ.

Properties of coefficient of correlation

① $-1 \leq \gamma \leq 1$

② $\gamma = -1$ Perfect -ive correlation
$\gamma = +1$ Perfect +ive correlation
$\gamma = 0$ No correlation

③ γ is a pure no. (does not depends on Units of Variable)



The degree to which the two Variables are interrelated is measured by a coefficient which is called the coefficient of correlation.
It summarizes in one figure the DIRECTION and DEGREE of CORRELATION.
The coefficient of correlation between two Variables x and y is generally denoted by γ.

Properties of coefficient of correlation

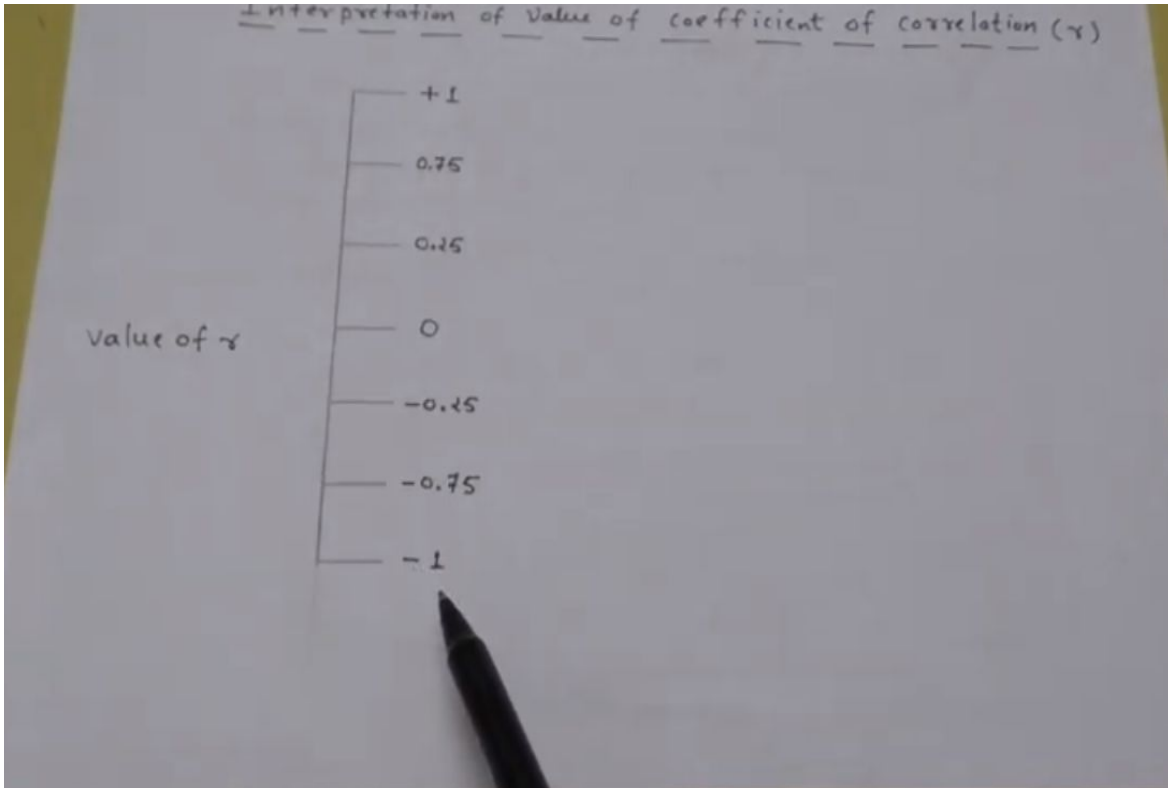
① $-1 \leq \gamma \leq 1$

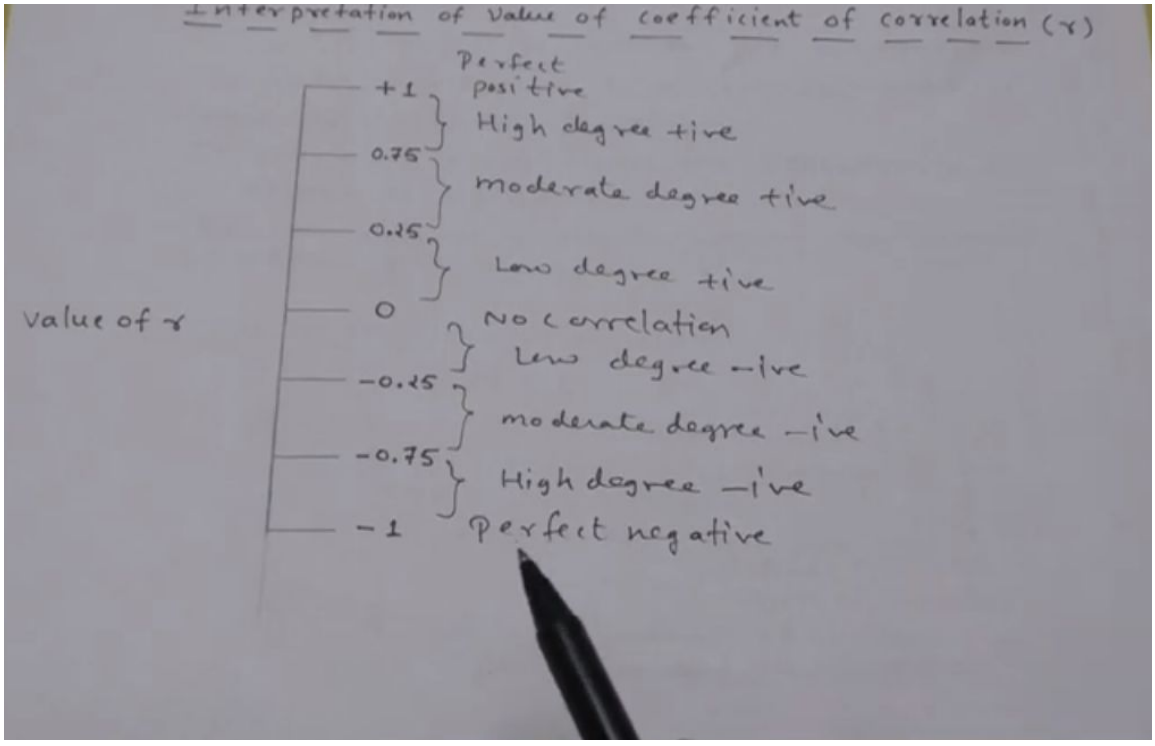
② $\gamma = -1$ Perfect -ive correlation
$\gamma = +1$ Perfect +ive correlation
$\gamma = 0$ No correlation

③ γ is a pure no. (does not depends on Units of Variable)

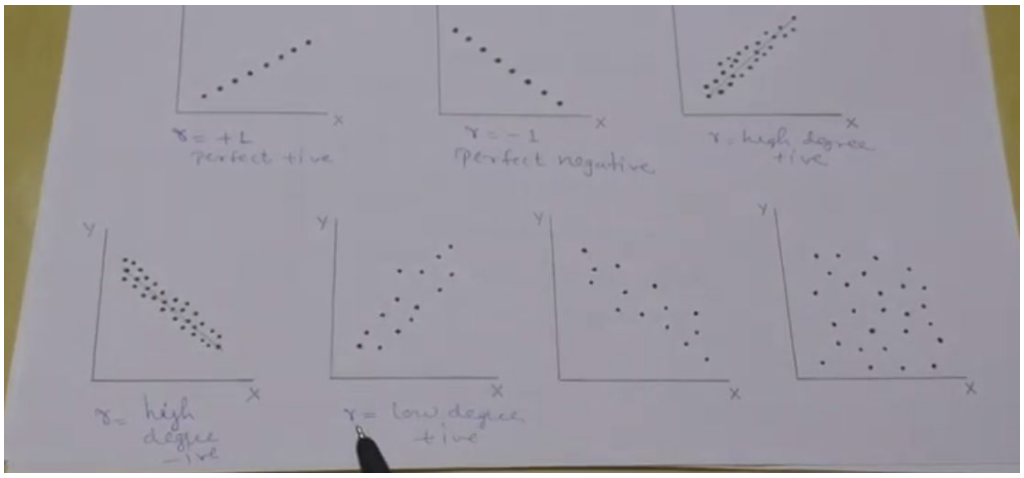
④ γ is Independent of change of origin and change of scale.

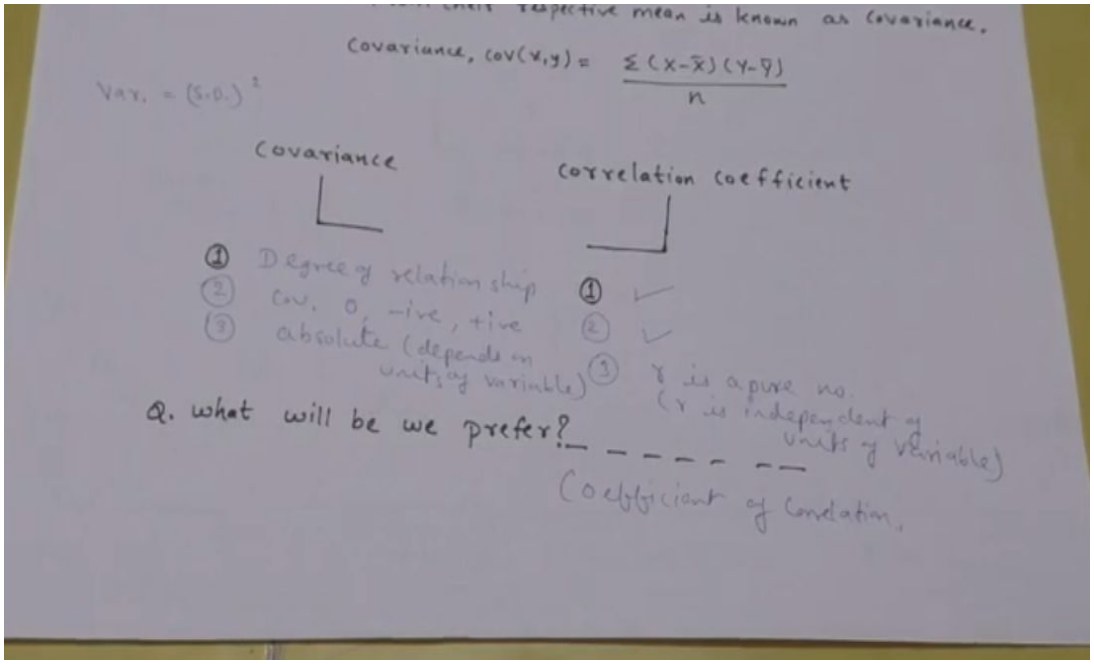
-1 to +1 means -1<=r<=+1

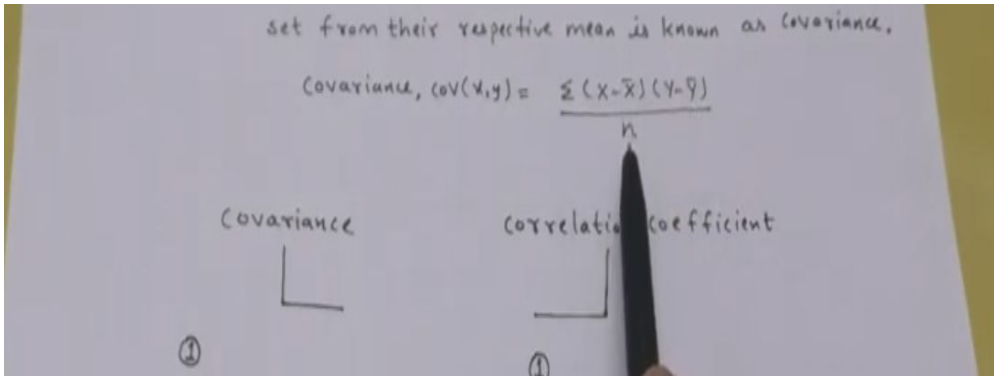

Interpretation of Value of coefficient of correlation (r)
Value of r
+1
0.75
0.25
0
-0.25
-0.75
-1


Interpretation of Value of coefficient of correlation (r)
Value of r
+1
Perfect positive
High degree +ive
0.75
moderate degree +ive
0.25
Low degree +ive
0
No correlation
Low degree -ive
-0.25
moderate degree -ive
-0.75
High degree -ive
-1
Perfect negative

It is a graphical method of showing correlation between x and y variables :-






set from their respective mean is known as covariance.
Covariance, cov(x,y) = Σ(x-x̄)(y-ȳ) / n
Covariance
correlation coefficient