Correlation Coefficient

Scatter Diagram Method

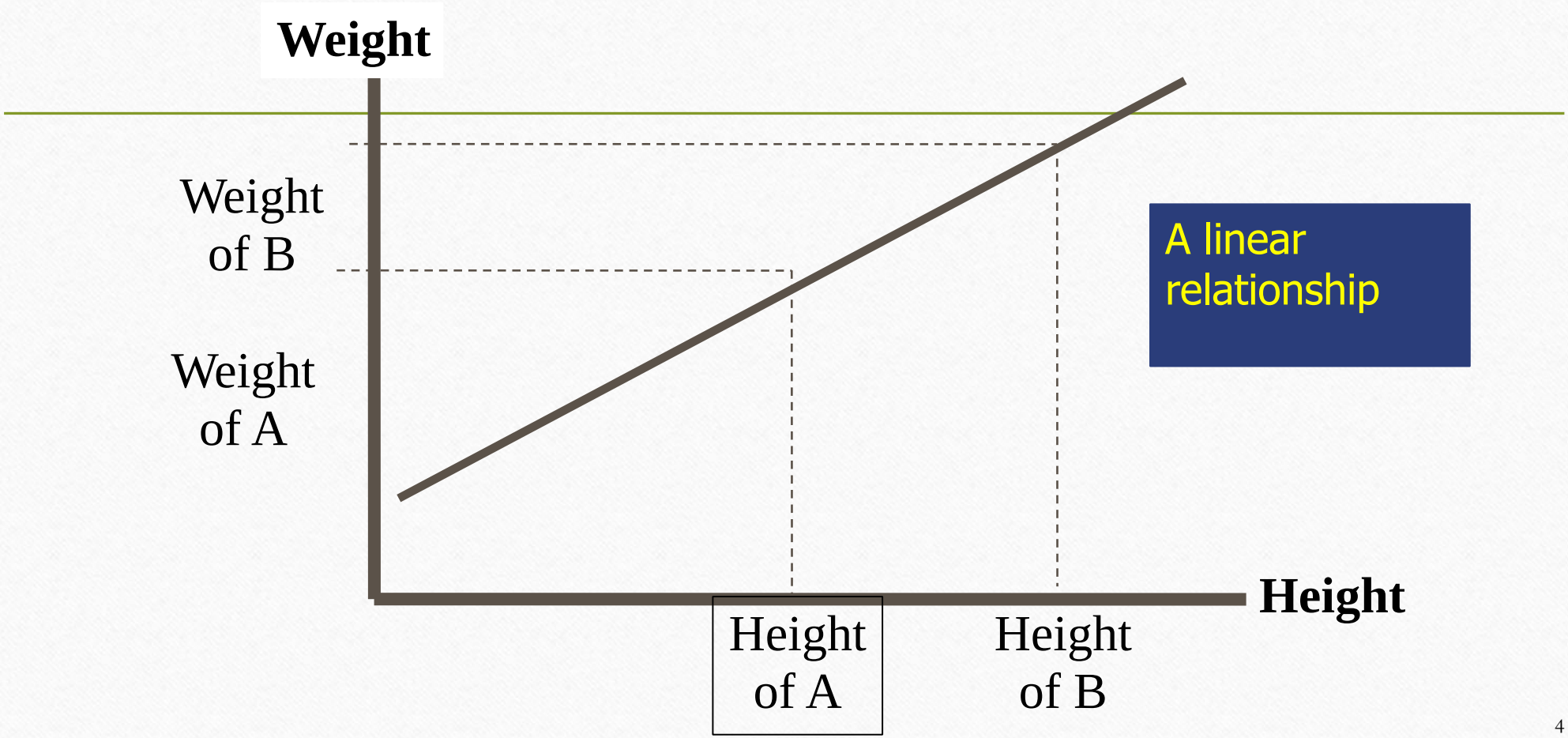
Methods of Studying Correlation

- Scatter Diagram Method
- Karl Pearson’s Coefficient of Correlation
- Spearman Rank coefficient of correlation
- Method of Least Squares

Scatter Diagram Method

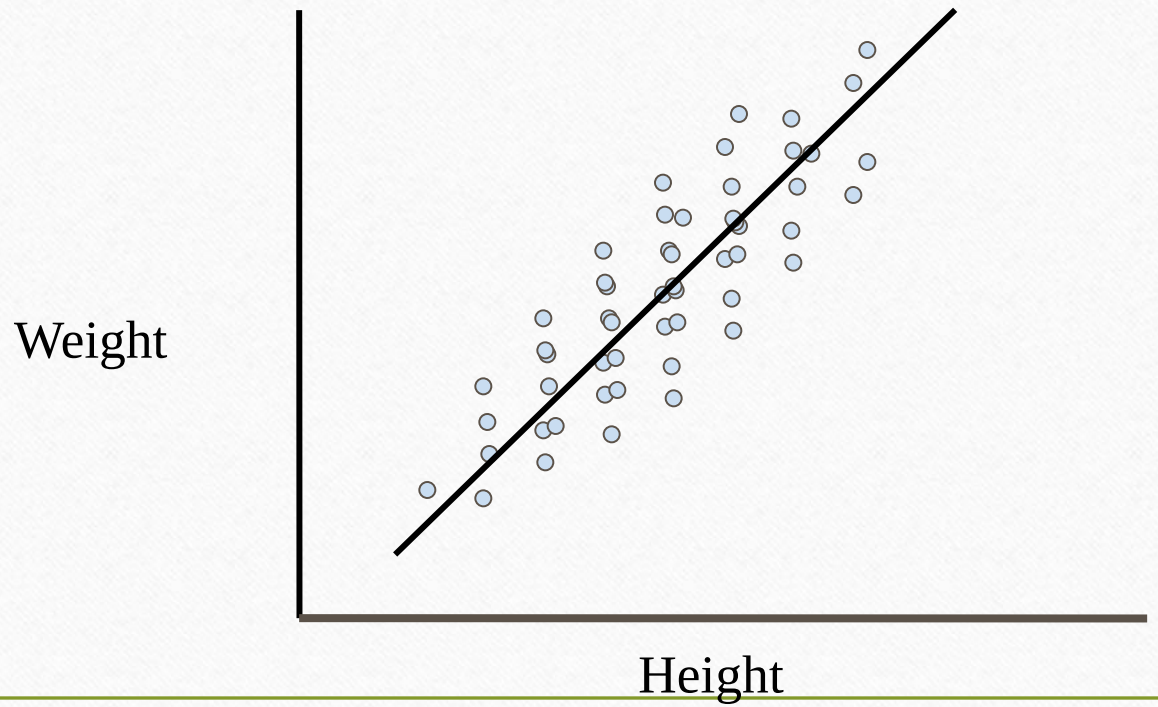
- Scatter Diagram is a graph of observed plotted points where each points represents the values of X & Y as a coordinate. It portrays the relationship between these two variables graphically.

A perfect positive correlation



High Degree of positive correlation

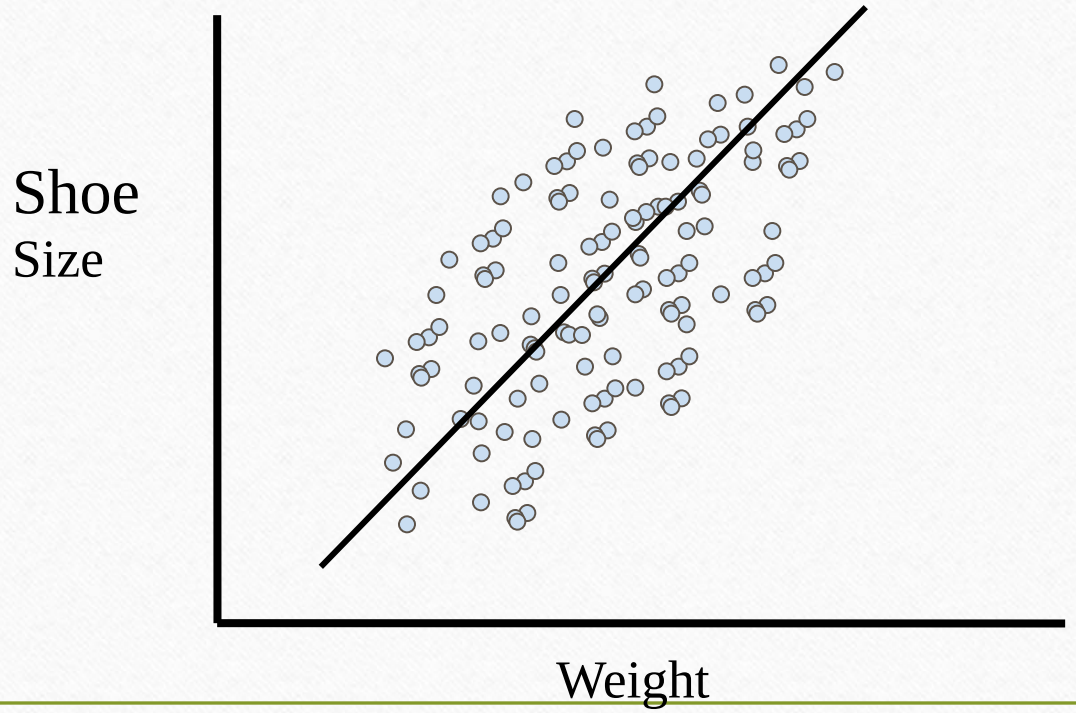
- Positive relationship



r = +.80

Degree of correlation

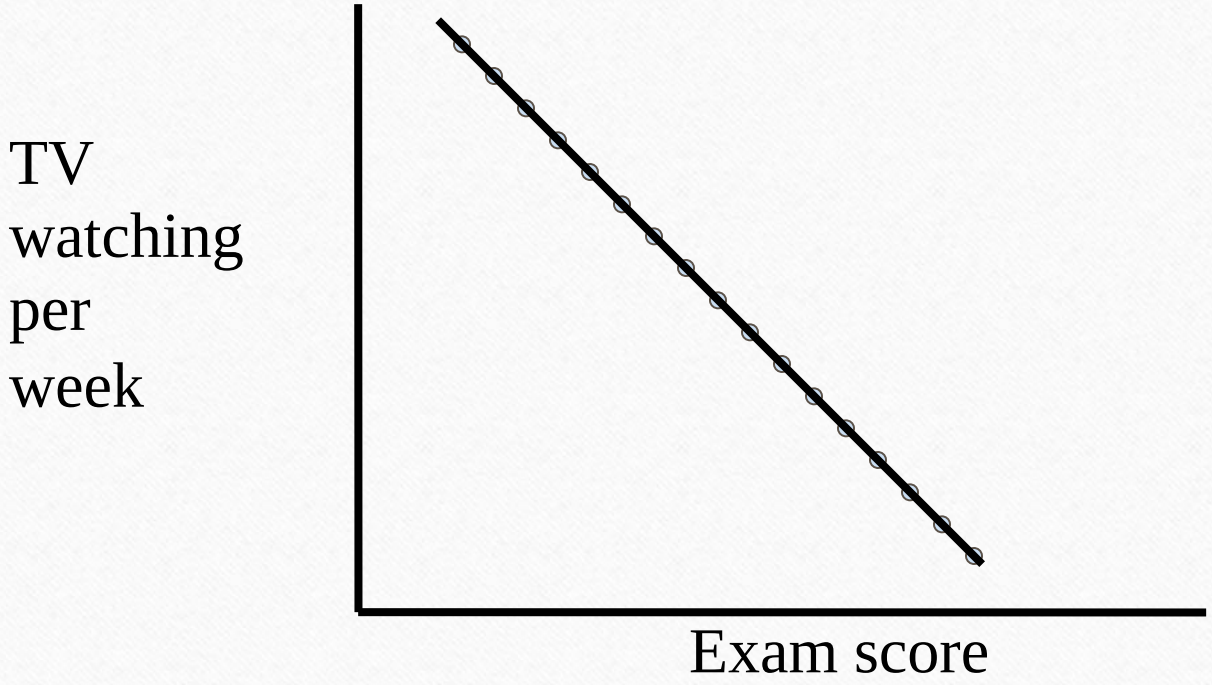
- **Moderate Positive Correlation**



r = + 0.4

Degree of correlation

- **Perfect Negative Correlation**

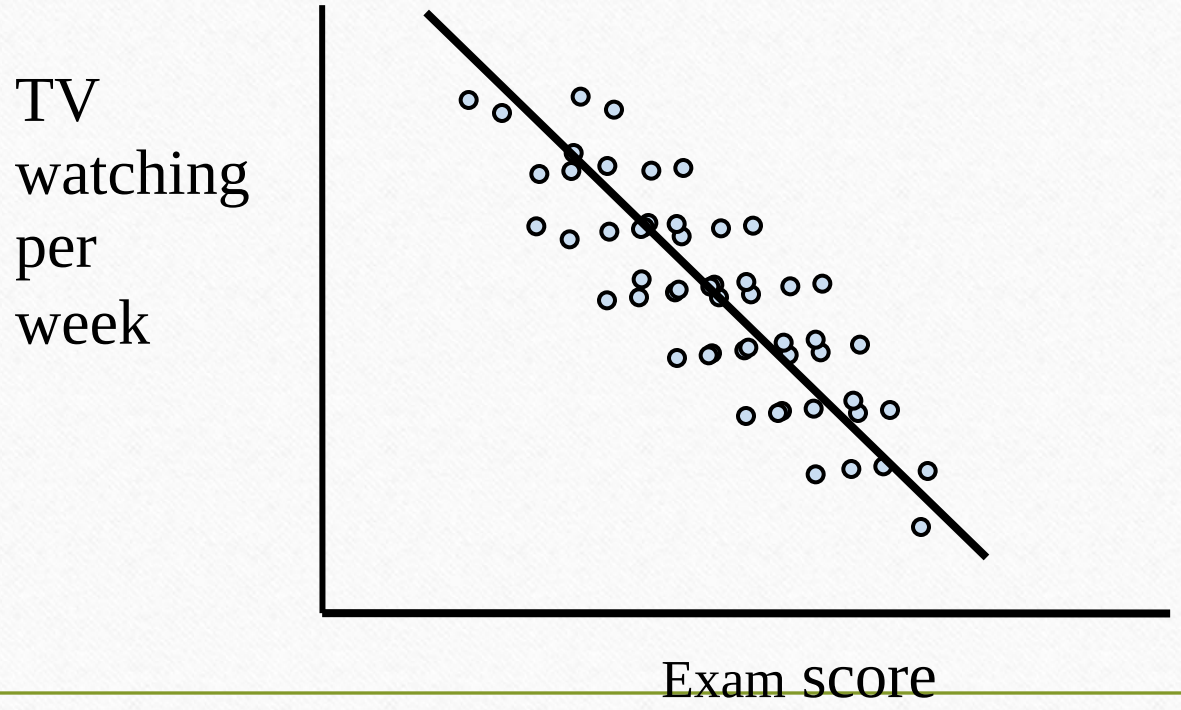


r = -1.0

Degree of correlation

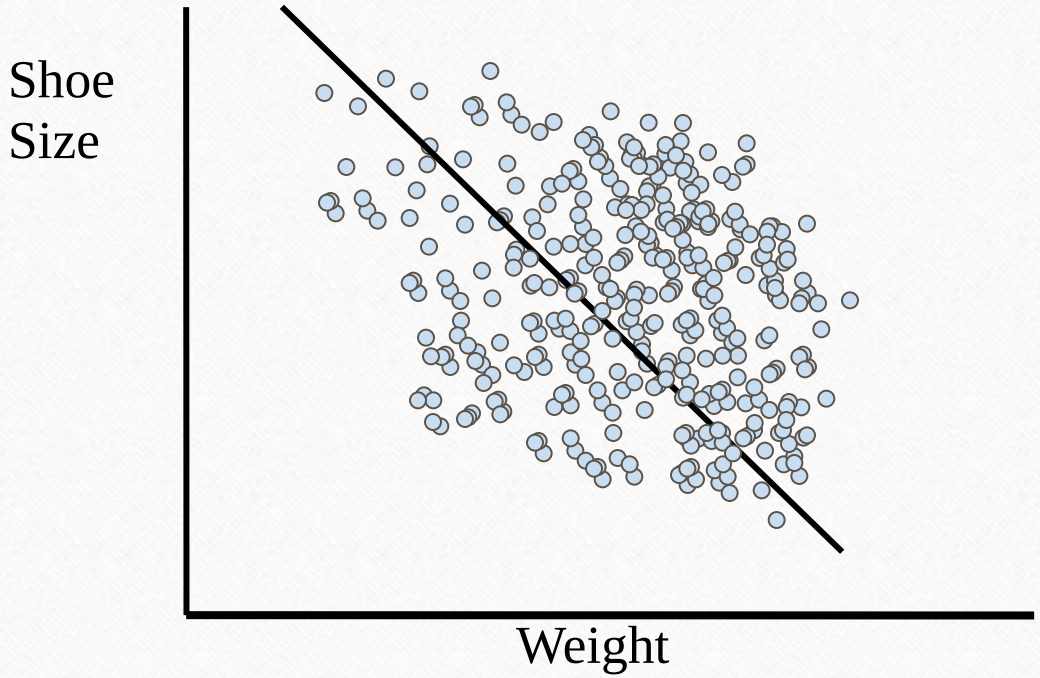
- **Moderate Negative Correlation**

r = -.80



Degree of correlation

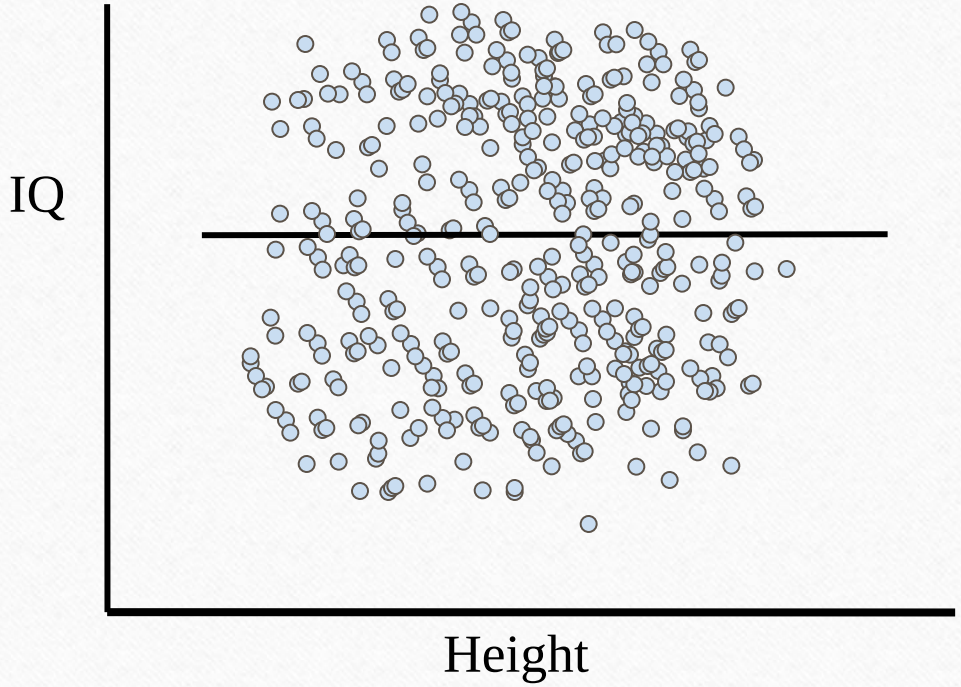
- **Weak negative Correlation**



r = - 0.2

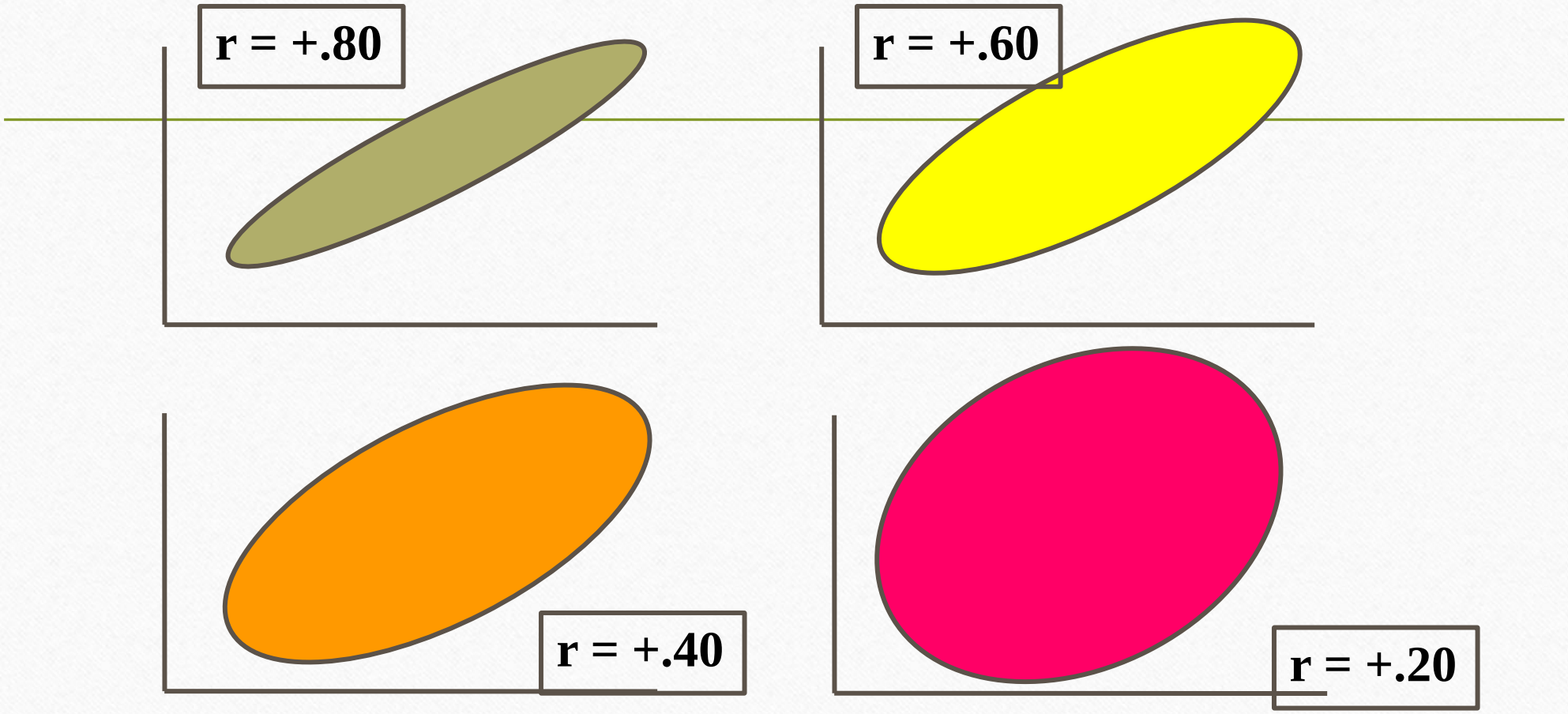
Degree of correlation

- **No Correlation (horizontal line)**



r = 0.0

Degree of correlation (r)



Direction of the Relationship

- **Positive relationship** – Variables change in the same direction.
  - As X is increasing, Y is increasing
  - As X is decreasing, Y is decreasing
  - E.g., As height increases, so does weight.

Indicated by sign; (+) or (-).

- **Negative relationship** – Variables change in opposite directions.
  - As X is increasing, Y is decreasing
  - As X is decreasing, Y is increasing
  - E.g., As TV time increases, grades decrease

Advantages of Scatter Diagram

- Simple & Non Mathematical method
- Not influenced by the size of extreme item
- First step in investing the relationship between two variables

Disadvantage of scatter diagram

- Can not say the exact degree of correlation i.e. exact value of correlation coefficient cannot be estimated.