Sadiq Public School

Do the right, fear no man

Lesson Plan

Subject	**Statistics**	**Date**	16/11/2024	**Class**	I2
Lesson Topic *(Textbook & Page No. if any)*	• Correlation chapter 15			**Time**	40 Minutes

Lesson Objectives / Students' Learning Outcomes (SLOs) *What are learners expected to learn after completing the lesson? These should be specific and able to be assessed.*	By the end of the lesson the students will be able to: • Know about the definition of correlation. • Differentiate between correlation and regression. • To compute the numerical value of correlation which is known as coefficient of correlation.
Resources *(Any supplementary Materials)*	Introduction to Statistics Part II Chapter No 15

Explanation

Correlation

If the values of two variables vary in such a way that the movements (increases or decreases)in one variable are accompanied by movements(increases or decreases) in the other, the variable are said to be correlated.

Correlation coefficient

A measure of the degree of relationship between two variables is called a coefficient of correlation or correlation coefficient.

Example 14.10 page 299

Find the coefficient of correlation from the following data.

X	1	2	3	4	5	6	7	8
Y	3	4	6	8	10	12	14	15

Solution

Computation of the correlation coefficient is shown in the following table.

X	Y	X^2	Y^2	XY
1	3	1	9	3
2	4	4	16	8
3	6	9	36	18
4	8	16	64	32
5	10	25	100	50
6	12	36	144	72
7	14	49	196	98
8	15	64	225	120
$\Sigma X = 36$	$\Sigma Y = 72$	$\Sigma X^2 = 204$	$\Sigma Y^2 = 790$	$\Sigma XY = 401$

$$r = \frac{n \cdot \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{[n \cdot \Sigma X^2 - (\Sigma X)^2]\,[n \cdot \Sigma Y^2 - (\Sigma Y)^2]}} = \frac{8 \cdot 401 - (36)(72)}{\sqrt{[8 \cdot 204 - (36)^2]\,[8 \cdot 790 - (72)^2]}} = \frac{3208 - 2592}{\sqrt{[1632 - 1296]\,[6320 - 5184]}}$$

$$= \frac{616}{\sqrt{336 \cdot 1136}} = \frac{616}{617.8155} \qquad r \approx 0.997$$

Homework

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