If ranks are not given

Ques: The marks obtained by 9 students in mathematics and Accountancy are as follows

Marks in Mathematics (X)	30	33	45	23	8	49	12	4	31
Marks in Accountancy (Y)	35	23	47	17	10	43	9	6	28

Calculate Spearman's rank correlation coefficient.

Solution:

Here, by assigning rank 1 to higher values for both X and Y, we have the following table

X	Rank in X (R_1)	Y	Rank in Y (R_2)	$D = R_1 - R_2$	D^2
30	5	35	3	5-3 = 2	4
33	3	23	5	3-5 = -2	4
45	2	47	1	2-1 = 1	1
23	6	17	6	6-6 = 0	0
08	8	10	7	8-7 = 1	1
49	1	43	2	1-2 = -1	1
12	7	9	8	7-8 = -1	1
04	9	6	9	9-9 = 0	0
31	4	28	4	4-4 = 0	0
					$\Sigma D^2 = 12$

Spearman's Coefficient of rank correlation is given by

$$\rho = 1 - \frac{6\Sigma D^2}{n(n^2-1)}$$

Here, $n = 9$ and $\Sigma D^2 = 12$

$$\rho = 1 - \frac{6 \times 12}{9(9^2-1)}$$

$$= 1 - \frac{72}{9 \times 80} = 1 - \frac{1}{10} = \frac{9}{10} = 0.9 \quad \text{Ans}$$

Ques: Calculate spearman's coefficient of rank correlation for the following data

X:	70	65	71	62	58	69	78	64
Y:	91	76	65	83	90	64	55	48

Ques: calculate rank correlation coefficient for the following data

X:	80	91	99	71	61	81	70	59
Y:	123	135	154	110	105	134	121	106