

# Worksheet: Spearman's Rank Correlation Coefficient



**Q1:** The data shows the relation between a company's production and its employees' salaries in *five* years.

Production	1,000	2,000	2,500	4,000	2,300
Salaries	150	200	250	700	180

Find the Spearman's correlation coefficient between production and salaries.

- A 0.9
- B 0.1
- C 0.95
- D 0.4
- E 0.94

**Q2:** What type of data is Spearman's rank correlation coefficient appropriate for?

- A Continuous and discrete data
- B Discrete data
- C Continuous data

**Q3:** Find the Spearman's correlation coefficient between sales and advertising from the given data.

Advertising	1,000	800	1,000	1,500
Sales	5,000	4,500	4,500	6,500

- A 0.925
- B 0.15
- C 0.9
- D 0.975
- E 0.85

**Q4:** Which of the following is the formula of Spearman's rank correlation coefficient?

- A  $1 - \frac{6 \sum d^2}{n(n^2 - 1)}$
- B  $1 - \frac{6 \sum d^2}{n(n^3 - 1)}$
- C  $1 - \frac{6 \sum d^2}{(n^2 - 1)}$
- D  $1 - \frac{\sum d^2}{n(n^2 - 1)}$
- E  $\frac{6 \sum d^2}{n(n^2 - 1)}$

**Q5:** The following table represents the relation between sale and profit for six models of televisions.

Television Sale	500	600	550	100	480	400
Television Profit	300	400	400	90	250	200

Find Spearman's correlation coefficient between television sale and profit.  
Round your answer to three decimal places.

- A 0.986
- B 0.929
- C 0.975
- D 0.014
- E 0.998

**Q6:** Find Spearman's correlation coefficient between  $x$  and  $y$ . Round your answer to three decimal places.

$x$	4	7	8	5	8	12
$y$	7	6	6	4	6	10

- A 0.616
- B 0.386
- C 0.614
- D 0.414
- E 0.898

**Q7:** In a study of the relation between students' grades in mathematics and science, the following results were found for six students.

Mathematics	D	B	A	B	D	D
Science	C	C	B	A	C	F

Find the Spearman's correlation coefficient. Round your answer to three decimal places.

- A 0.814
- B 0.575
- C 0.243
- D 0.757
- E 0.186

**Q8:** The following table represents the relation between the results of employees' appraisal this year and last year.

Last Year	Meets expectations	Needs improvement	Exceptional	Meets expectations	Exceeds expectations
This Year	Exceeds expectations	Meets expectations	Exceptional	Needs improvement	Exceeds expectations

Find the Spearman's correlation coefficient between last and current years results.

- A 0.175
- B 0.775
- C 0.963
- D 0.871
- E 0.825

**Q9:** In a study to discover the relationship between the age of a mother and the number of her children, the following data were found.

Mother's Age	19	22	24	28	29	32	34	35
Number of Children	2	1	1	2	3	4	3	5

Find Spearman's correlation coefficient. Round your answer to three decimal places.

- A 0.777
- B 0.875
- C 0.223
- D 0.851
- E 0.149

**Q10:** The table shows the relation between two variables,  $L$  and  $M$ . Find Spearman's correlation coefficient between them, rounded to the nearest thousandth.

$L$	50	90	75	150	63	35	75	90	50
$M$	130	130	64	80	100	55	80	100	80

- A 0.283
- B 0.479
- C 0.717
- D 0.721
- E 0.279

**Q11:** Using the information given in the table, find the Spearman's rank correlation between the variables  $x$  and  $y$ . Give your answer to four decimal places.

$x$	Good	Excellent	Good	Excellent	Excellent	Excellent
$y$	Poor	Good	Poor	Excellent	Very Good	Good

- A 0.8714
- B 0.7750
- C 0.9071
- D 0.9000



**Q12:** Using the information from the table, find the Spearman's rank correlation coefficient and determine the type of correlation between the age of a mother and number of children. Give the numerical part of your answer to four decimal places.

Age of Mothers (Years)	24	27	35	24	35	21	35	33
No. of Children (n)	1	4	3	5	3	1	2	4

- A 0.1845, direct correlation
- B 0.2113, direct correlation
- C 0.1845, inverse correlation
- D  $-0.2113$ , inverse correlation

**Q13:** Using the information from the table, find the Spearman's rank correlation coefficient and determine the type of correlation between the variables  $X$  and  $Y$ . Give the numerical part of your answer to four decimal places.

$X$	14	9	10	13	6	9
$Y$	21	20	23	16	20	16

- A 0.3, direct correlation
- B 0.2714, inverse correlation
- C 0.2714, direct correlation
- D 0.3, inverse correlation