

Edexcel S3 – Ch. 5: Regression and Correlation

1. The table below shows the price of an ice cream and the distance of the shop where it was purchased from a particular tourist attraction.

Shop	Distance from tourist attraction (m)	Price (£)
<i>A</i>	50	1.75
<i>B</i>	175	1.20
<i>C</i>	270	2.00
<i>D</i>	375	1.05
<i>E</i>	425	0.95
<i>F</i>	580	1.25
<i>G</i>	710	0.80
<i>H</i>	790	0.75
<i>I</i>	890	1.00
<i>J</i>	980	0.85

- (a) Find, to 3 decimal places, the Spearman rank correlation coefficient between the distance of the shop from the tourist attraction and the price of an ice cream.

(5)

- (b) Stating your hypotheses clearly and using a 5% one-tailed test, interpret your rank correlation coefficient.

(4)

June 2006 Q4

2. During a village show, two judges, P and Q , had to award a mark out of 30 to some flower displays. The marks they awarded to a random sample of 8 displays were as follows:

Display	A	B	C	D	E	F	G	H
Judge P	25	19	21	23	28	17	16	20
Judge Q	20	9	21	13	17	14	11	15

- (a) Calculate Spearman's rank correlation coefficient for the marks awarded by the two judges.

(6)

After the show, one competitor complained about the judges. She claimed that there was no positive correlation between their marks.

- (b) Stating your hypotheses clearly, test whether or not this sample provides support for the competitor's claim. Use a 5% level of significance.

(4)

June 2007 Q1

3. The product moment correlation coefficient is denoted by r and Spearman's rank correlation coefficient is denoted by r_s .

- (a) Sketch separate scatter diagrams, with five points on each diagram, to show

(i) $r = 1$,

(ii) $r_s = -1$ but $r > -1$.

(3)

Two judges rank seven collie dogs in a competition. The collie dogs are labelled A to G and the rankings are as follows

Rank	1	2	3	4	5	6	7
Judge 1	A	C	D	B	E	F	G
Judge 2	A	B	D	C	E	G	F

- (b) (i) Calculate Spearman's rank correlation coefficient for these data.

(6)

- (ii) Stating your hypotheses clearly, test, at the 5% level of significance, whether or not the judges are generally in agreement.

(5)

June 2008 Q4