

1. The table gives information about the selling price and the mileages of 8 used cars.

| Selling price (to the nearest £500) | Mileage (to the nearest 1000 miles) | | |
|---|--|--|--|
| 11 000 | 78 000 | | |
| 8500 | 65 000 | | |
| 9500 | 39 000 | | |
| 7000 | 34 000 | | |
| 12 500 | 23 000 | | |
| 5000 | 105 000 | | |
| 9000 | 48 000 | | |
| 14 000 | 20 000 | | |

(a) Calculate Spearman's coefficient of rank correlation for this information.

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(4)

(b) (i) Interpret the correlation between the selling price and the mileage of these used cars.

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(ii) Comment on the strength of the correlation.

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(2)

(Total for Question 1 is 6 marks)

2. Mrs Smith and Mrs Patel ranked the work of 8 students.
The table gives information about their ranks.

| Student | Rank (Mrs Smith) | Rank (Mrs Patel) | | |
|---------|------------------|------------------|--|--|
| A | 4 | 6 | | |
| B | 8 | 4 | | |
| C | 1 | 3 | | |
| D | 6 | 1 | | |
| E | 2 | 7 | | |
| F | 7 | 8 | | |
| G | 3 | 2 | | |
| H | 5 | 5 | | |

- (i) Calculate Spearman's coefficient of rank correlation for this information.

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- (ii) Interpret your answer.

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(Total for Question 2 is 4 marks)

3. The table gives information about the heights, in cm, of ten athletes and their positions in a throwing competition.

| Athlete | Height (cm) | Position | | | |
|---------|-------------|----------|--|--|--|
| A | 112 | 8 | | | |
| B | 114 | 9 | | | |
| C | 123 | 7 | | | |
| D | 128 | 5 | | | |
| E | 134 | 10 | | | |
| F | 146 | 3 | | | |
| G | 148 | 4 | | | |
| H | 151 | 6 | | | |
| I | 154 | 1 | | | |
| J | 158 | 2 | | | |

- (a) Work out Spearman's rank correlation coefficient for these data.

You may use the blank columns in the table to help with your calculations.

.....
(3)

- (b) Interpret your answer to part (a).

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 (1)

(Total for Question 3 is 4 marks)

4. Dr Farah collected some information about the Body Mass Index (BMI) and the finishing position in a marathon for each of ten male adults.

The table shows this information.

| Adult | BMI | Finishing position | Rank of BMI | d | d^2 |
|-------|------|--------------------|-------------|-----|-------|
| A | 18.4 | 3 | | | |
| B | 19.5 | 2 | | | |
| C | 19.8 | 1 | | | |
| D | 20.5 | 6 | | | |
| E | 21.2 | 4 | | | |
| F | 22.5 | 5 | | | |
| G | 23.7 | 9 | | | |
| H | 25.3 | 10 | | | |
| I | 26.7 | 7 | | | |
| J | 29.3 | 8 | | | |

- (a) Calculate Spearman's coefficient of rank correlation for this information.

You may use the columns in the table to help with your calculations.

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(3)

- (b) (i) Describe the correlation.

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- (ii) Interpret the correlation in the context of the information in the table.

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(2)

(Total for Question 4 is 5 marks)

- 5 8 people were in a cake baking competition.

Judge X and Judge Y each put the cakes in rank order.

Rank 1 is for the best cake.

Here are the results.

| Cake | Judge X | Judge Y | | |
|-------------|----------------|----------------|--|--|
| A | 1 | 5 | | |
| B | 6 | 8 | | |
| C | 2 | 4 | | |
| D | 5 | 2 | | |
| E | 4 | 1 | | |
| F | 3 | 7 | | |
| G | 7 | 6 | | |
| H | 8 | 3 | | |

- (a) Work out Spearman's coefficient of rank correlation for the information in the table. You may use the blank columns in the table to help you with your calculations.

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(3)

- (b) Interpret your answer to part (a).

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(1)

(Total for Question 5 is 4 marks)
