1. At the local pool, the swim coach conducts a test to determine if there is any association between an athlete's age and their best time swimming the 50 m freestyle. Eight athletes are chosen at random, and their details are shown below.

Athlete	A	B	C	D	E	F	G	H
Athlete's Age (yrs)	12	14	20	17	18	24	10	33
Time (sec)	49.1	48.2	43.1	46.3	44.4	44.2	55.0	45.8

(a) Complete the table of ranks. (2 marks)

Athlete	A	B	C	D	E	F	G	H
Athlete Age rank					4			
Time rank							1	

(b) Calculate the Spearman's Rank Correlation Coefficient. (2 marks)

(c) Interpret this r_s in the context of the question. (1 mark)

(d) Suggest why the coach did not use Pearson's Product Moment Correlation Coefficient with his data from the original table. (1 mark)

Mark scheme:

(a)

Athlete	A	B	C	D	E	F	G	H
Athlete Age rank	**7**	**6**	**3**	**5**	4	**2**	**8**	**1**
Time rank	**2**	**3**	**8**	**4**	**6**	**7**	1	**5**

(A1)

(A1)

(b) $r_s = -0.628$ (A2)

(c) $r_s = -0.628$ *indicates a negative correlation between a person's age and the best time they swim the 50 m freestyle. The older the athlete gets, the faster their time tends to be.* (R1)

(d) *Examples: Data may not be linear, the SRCC is less sensitive to outliers, there could be outliers, there could be multiple swimmers of different ages with the same swim times.* (R1)