nelsonnet

Scatterplots and associations

For each table of bivariate data shown in Questions 1 to 3 below:

a make a scatterplot of the data with the first variable on the horizontal axis.

b comment on the pattern of the data.

1

X	1	2	3	4	5	6	7	8	9	10	11	12
Y	4	6	9	11	15	14	13	18	22	26	24	28

2

A	5	10	20	25	30	30	40	50	55	60	70	75
B	80	60	50	55	40	50	55	40	30	15	20	15

3

P	7	9	11	13	14	15	18	20	21	22	23	24
Q	47	45	50	56	53	60	64	63	60	70	65	69

4 Use a scatterplot of the values below to describe any apparent association.

X	8	13	14	12	16	12	15	17	23	24
Y	41	43	32	33	31	17	21	12	15	3

5 Use a scatterplot of the values below to describe any apparent association.

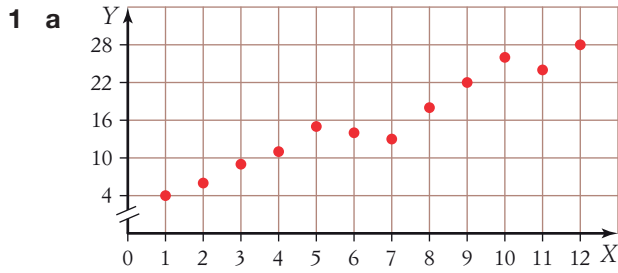| A	21.4	31.8	41.8	44.5	52.9	58.3	74.3	77.3	81.8	92.2
B	109.1	92.9	84.8	85.7	74.4	70	56.3	49.9	46.6	37.9

6 This table shows the percentage of lectures attended by first-year university students in a semester and their corresponding mark in an exam for that subject. Use a scatterplot to describe any association.

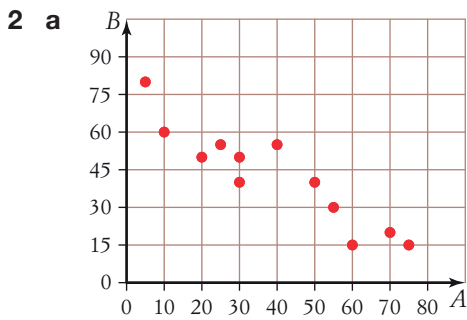| Lectures attended (%)	70	59	85	93	78	85	84	69	70	82
Exam result (%)	80	62	89	98	84	91	83	72	75	85

7 This table relates the maximum daily temperature to the number of people swimming at a local beach. Use a scatterplot to describe any association.

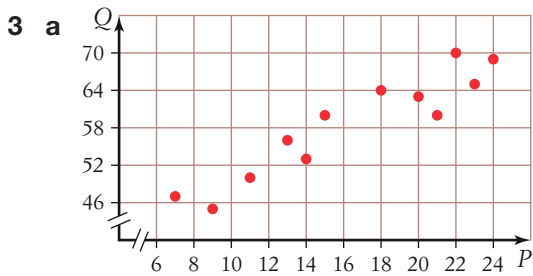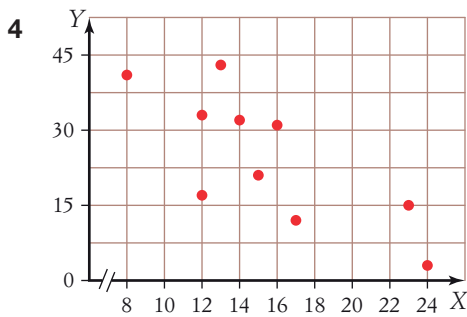| Maximum temperature (°C)	34	26	28	33	37	35	31	30	26	25
Number of beach swimmers	42	27	31	34	36	38	35	32	24	26

Answers

1 a

b The points slope upwards from left to right, so there is a positive association between *X* and *Y*.
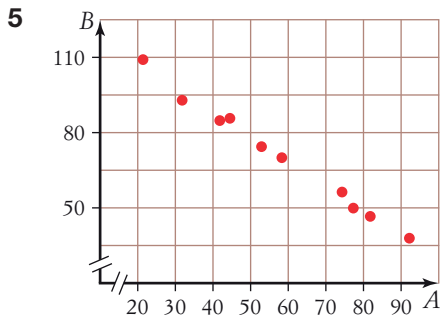
2 a

b The points slope downwards from left to right, so there is a negative association between *A* and *B*.
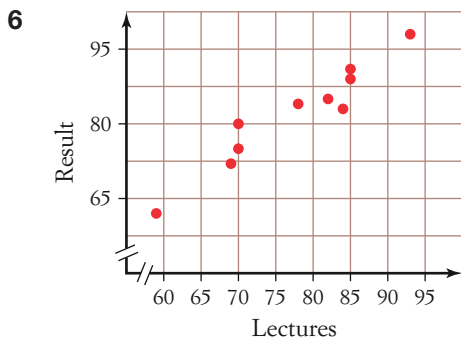
3 a

b The points slope upwards from left to right, so there is a positive association between *P* and *Q*.
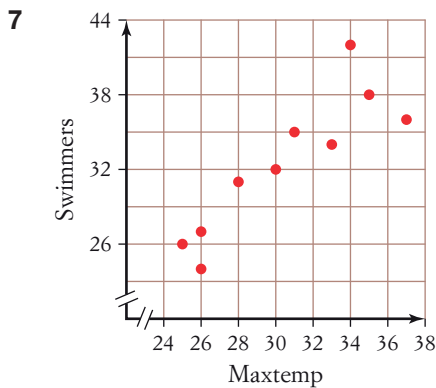
4

The points could form a straight line going down from left to right, but it is not very clear.
Therefore there is a weak negative association between *X* and *Y*.

5

The points form a straight line that is almost perfect going down from left to right. Therefore there is a strong negative association between A and B.

6

The number of lectures attended and exam results have a moderate positive linear association. Attending lectures produces a higher grade in the exam.

7

The maximum temperature and the number of swimmers at a local beach have a moderate positive linear association. More people go for a swim at the beach when it is hotter.