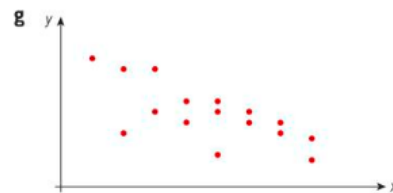
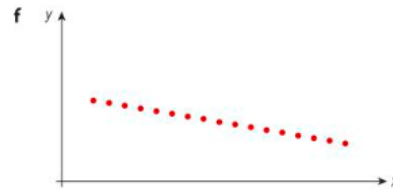
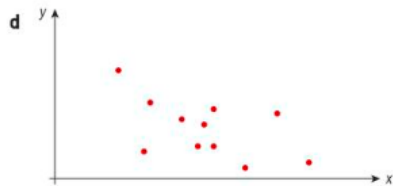
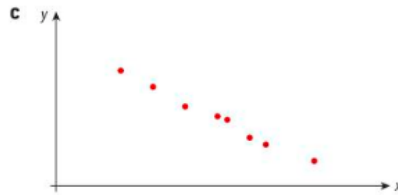
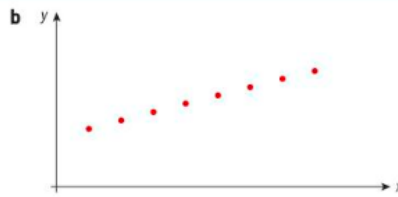
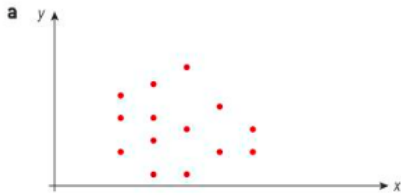


PRACTICE 6.1 – Measuring Correlation

* Full, worked solutions can be found in the folder linked on the Course Website 😊

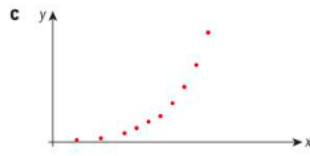
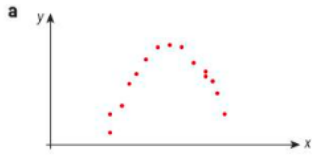
Exercise 6A

- 1 For each of the situations described in Investigation 1 part 1, state whether there is:
 - i correlation
 - ii linear correlation.
- 2 For each diagram, state (if possible) the direction (positive/negative), form (linear/non-linear) and strength (strong/moderate/weak/zero) of the relationship.



Exercise 6B

- 1 For each scatter plot, state whether you would use Pearson's product moment correlation coefficient to measure the strength of the correlation.



- 2 A small study involving 10 children is conducted to investigate the correlation between gestational age at birth (in weeks) and birth weight (in grams). The results are shown in the table.

Age at birth (weeks)	34.6	36	39.3	42.4	40.3	41.4	39.7	41.1	37	42.1
Birth weight (g)	1895	2028	2837	3826	3258	3660	3350	3300	3000	3900

- Plot the data points on a scatter graph. Label the axes.
 - Find Pearson's product moment correlation coefficient, r .
 - Comment on the correlation.
- 3 A biologist is studying the relationship between height above sea level and the numbers of certain species of plant at that particular height over an area of 100 m^2 . The table shows the information collected.

Height (metres)	0	100	200	450	500	700	900	1000
Number of plants	1	2	5	8	8	10	12	13

- Plot the data points on a scatter graph. Label the axes.
 - Find Pearson's product moment correlation coefficient, r .
 - Comment on the correlation.
- 4 The heights (in metres) and the weights (in kilograms) of 10 basketball players are given in the table.

Height (m)	1.98	2.11	2.06	2.08	2.13	1.96	1.93	2.02	1.83	1.98
Weight (kg)	93	117.9	104.3	95.3	113.4	84	86.2	99.8	83.9	97.5

- Plot the data points on a scatter graph. Label the axes.
- Find Pearson's product moment correlation coefficient, r .
- Comment on the relationship between the coefficient and the graph.

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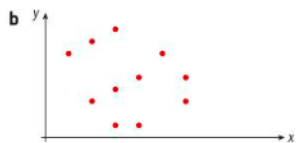
Exercise 6C

- 1 Label each of these scatter plots with one of the following values of r : -0.6 , 1 , 0.9 .



- 2 Label each of these scatter plots with one of the following values of r : 0 , 0.7 , -0.9 .





3 Label each of these scatter plots with one of the following values of r : -1 , 0.5 , -0.3 .



4 A school grading system ranges from 0 to 10. The table shows, for 10 students, the number of hours they study on average per week, s , and their grades, g .

s	32	30	40	48	35	50	52	60	43	50
g	4	4	6	7	6	7	8	9	6	10

- Find Pearson's product moment correlation coefficient, r , for this data.
- Describe the correlation.
- Comment on the effect on the grade of studying for more hours.

5 Different weights were attached to a vertical spring and the lengths of the spring measured. The table summarizes the results.

Weight (g)	0	10	30	50	90	110	150	200	220	250
Length (cm)	0	0.5	2	3	6	6.5	8	10	12	16

- Find Pearson's product moment correlation coefficient, r , for this data.
- Comment on the correlation.