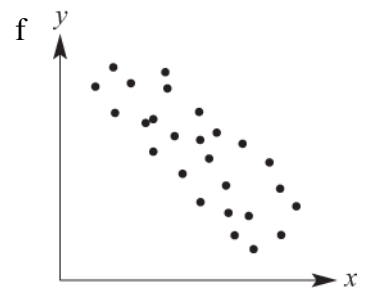
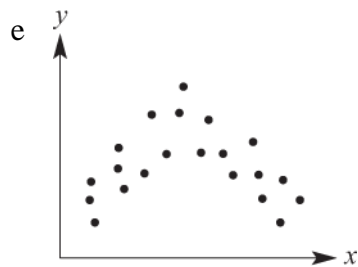
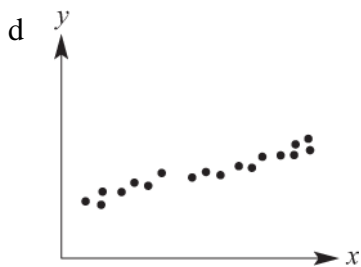
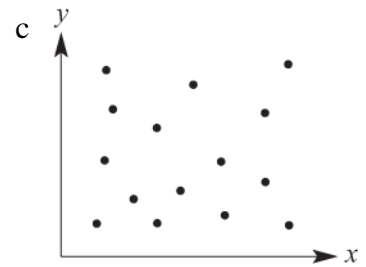
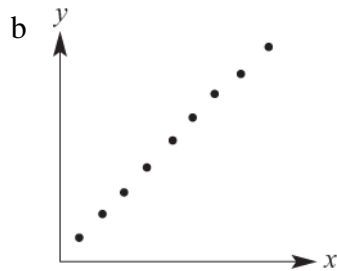
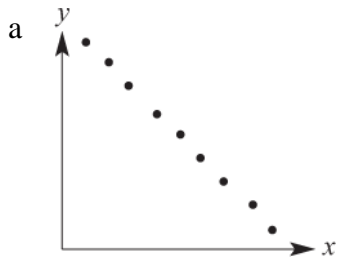


## Focus Study Worksheet 13.2 Correlation coefficient

### Exercise 13B (Textbook pages 388–390)

1 State whether the correlation coefficient is positive, negative or zero.



2 Draw a scatterplot that shows:

a high positive correlation

b low positive correlation

c zero correlation

d low negative correlation

3 Describe the strength of the linear relationships with the following correlation coefficients.

a  $r = 0.3$

---

b  $r = -1$

---

c  $r = 0.9$

---

d  $r = -0.9$

---

e  $r = -0.3$

---

f  $r = 1$

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4 The age of a child versus head circumference is shown in the scatterplot.

a State whether the relationship is positive or negative.

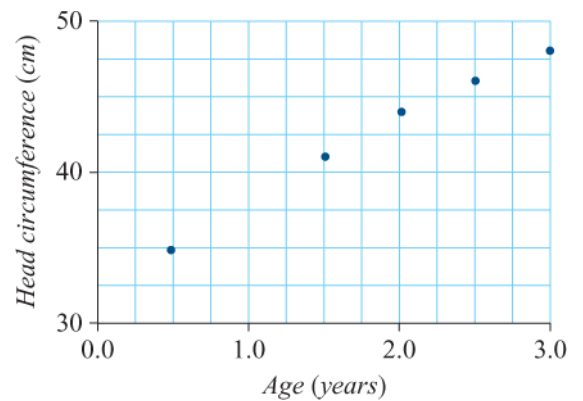
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b Describe the strength of the relationship as perfect, high or low.

---

c Estimate the value of the correlation coefficient.

---



5 Calculate the correlation coefficient to three decimal places for each table.

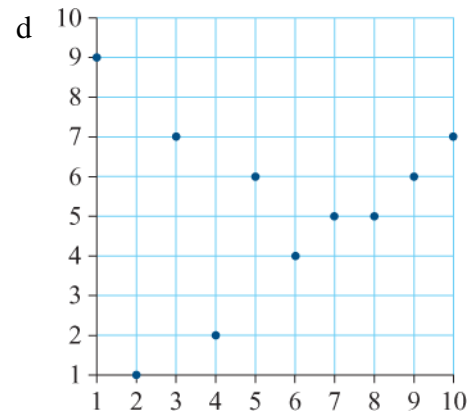
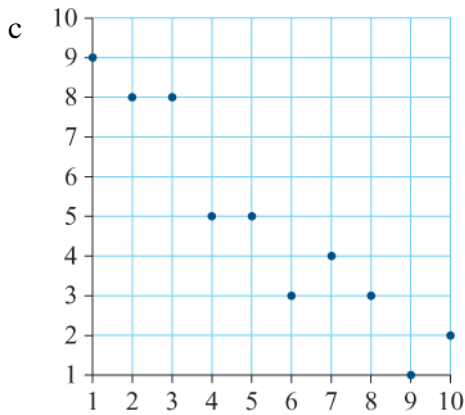
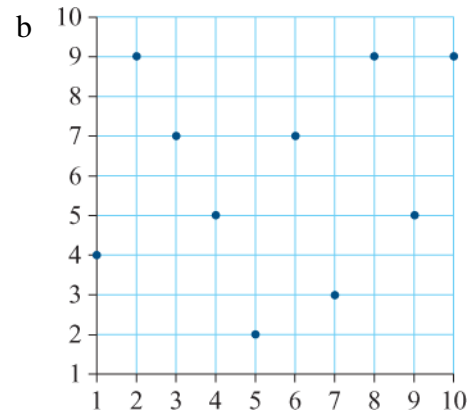
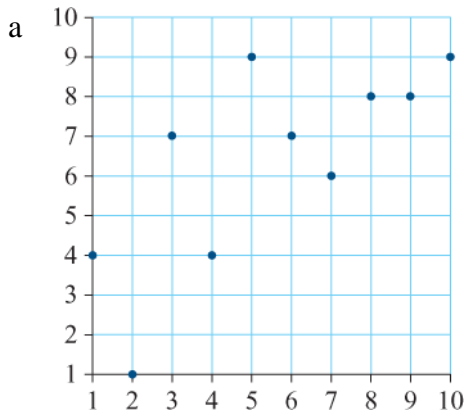
a

$x$	2	3	4	5	6	7	8	9
$y$	2	5	7	10	12	16	19	20

b

$x$	2	3	4	5	6	7	8	9	10	11	12
$y$	35	31	29	26	20	19	16	14	10	6	3

6 Calculate the correlation coefficient to three decimal places for each scatterplot.



7 The mass (in kg) and body mass index (BMI) of nine students is shown in the scatterplot.

a State whether the relationship is positive or negative.

\_\_\_\_\_

b Describe the strength of the relationship as perfect, high or low.

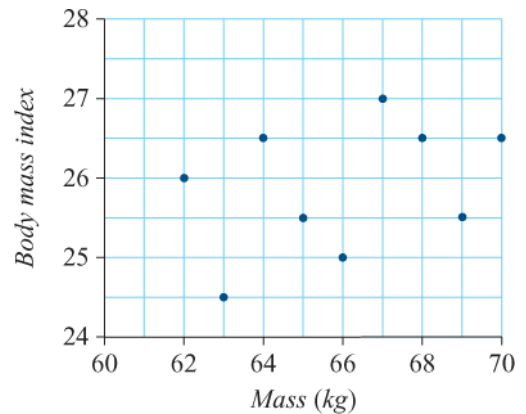
\_\_\_\_\_

c Calculate the value of the correlation coefficient.

\_\_\_\_\_

d Do you think BMI is related to mass?

\_\_\_\_\_



### Development

8 A developing nation compared body mass to income. The correlation coefficient for these quantities was  $-0.2$ . What is the meaning of this correlation?

\_\_\_\_\_

9 Each member of a group of males had his height and foot length measured and recorded. The correlation coefficient between these variables was  $0.9$ . Describe the relationship between height and foot length.

\_\_\_\_\_

10 The table below shows the heart rate (beats per minute) and the score out of 20 in a test.

<b>Heart rate (<math>h</math>)</b>	62	63	66	68	70	72	75	78	79	80
<b>Score on test (<math>s</math>)</b>	19	18	16	18	15	14	11	10	9	8

a Draw a scatterplot using the data in the table.

b State whether the relationship is positive or negative.

---

c Describe the strength of the relationship as perfect, high or low.

---

d Calculate the value of the correlation coefficient. Answer correct to four decimal places.

---

11 Rose believes tall women tend to form relationships with taller men than do short women. Do you agree? Explain your view using the data in the table.

<b>Height women (cm)</b>	168	163	168	165	178	165	170	175	169	174
<b>Height men (cm)</b>	183	173	178	173	180	165	168	181	179	175

12 A report found a high positive correlation between the shoe size of primary school students and their reading ability.

a Does this mean people with big feet are better at reading? Explain your answer.

---

b What other factors might explain this relationship?

---



13 There is a high positive correlation between health and income.

a This correlation is commonly thought to reflect a causal link running from income to health. Explain how higher income can cause better health.

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b Some experts believe the correlation is a causal link running from health to income. Explain how better health can cause higher income.

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