

Scatter Graphs

ANSWERS

1

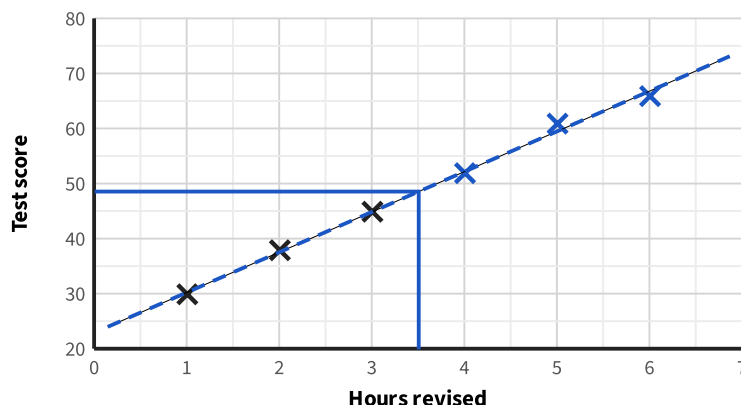
Hours revised and test scores for six students.

Hours	1	2	3	4	5	6
Score	30	38	45	52	61	66

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the score when the hours is 3.5.

(b) positive correlation

(c) about 49 (accept 46 to 52)



2

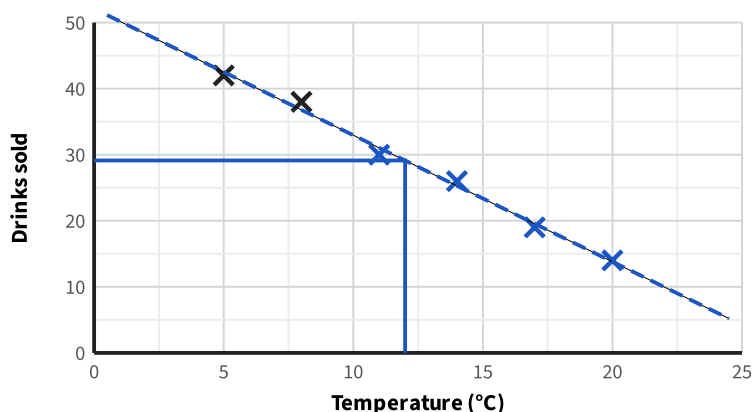
Temperature and hot drinks sold at a café.

Temperature	5	8	11	14	17	20
Drinks	42	38	30	26	19	14

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the drinks when the temperature is 12.

(b) negative correlation

(c) about 29 (accept 26 to 32)



3

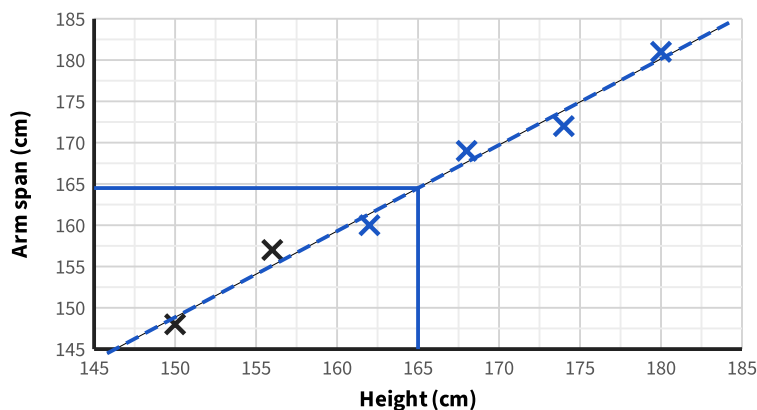
Height and arm span of six students (cm).

Height	150	156	162	168	174	180
Arm span	148	157	160	169	172	181

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the arm span when the height is 165.

(b) positive correlation

(c) about 164 (accept 162 to 168)



4

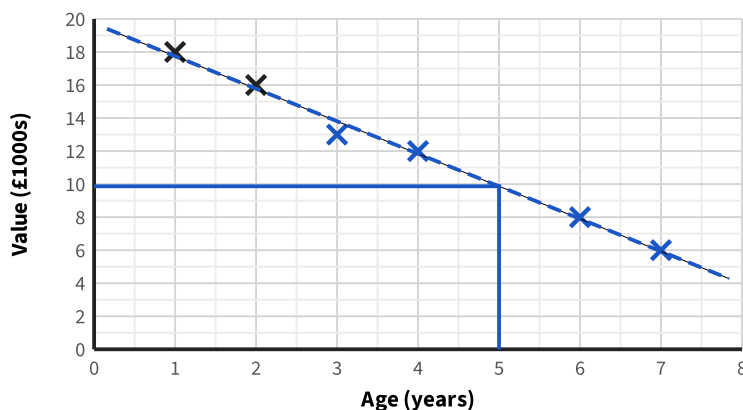
Age of a car and its value (£ thousands).

Age	1	2	3	4	6	7
Value	18	16	13	12	8	6

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the value when the age is 5.

(b) negative correlation

(c) about 10 (accept 8 to 11)



5

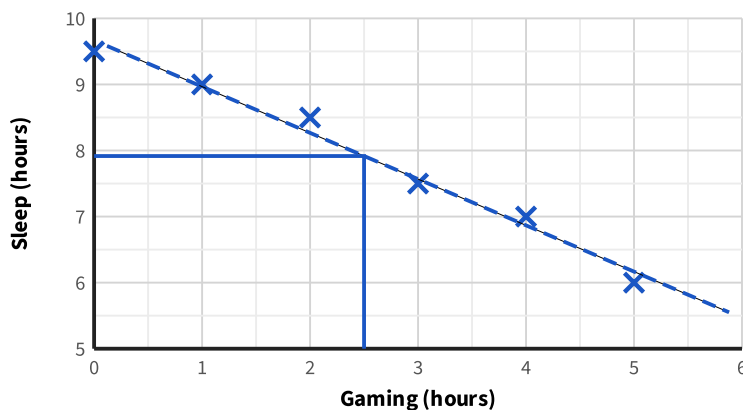
Time spent gaming and hours of sleep.

Gaming	0	1	2	3	4	5
Sleep	9.5	9	8.5	7.5	7	6

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the sleep when the gaming is 2.5.

(b) *negative correlation*

(c) *about 7.9 (accept 7.4 to 8.4)*



6

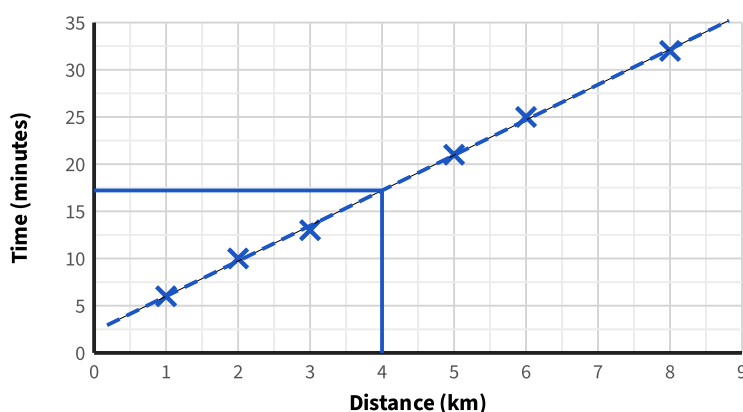
Distance from school and journey time.

Distance	1	2	3	5	6	8
Time	6	10	13	21	25	32

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the time when the distance is 4.

(b) *positive correlation*

(c) *about 17 (accept 14 to 20)*



7

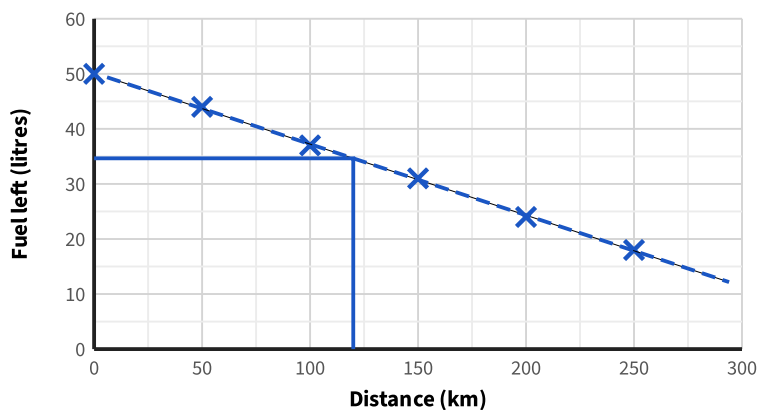
Fuel left and distance driven.

Distance	0	50	100	150	200	250
Fuel	50	44	37	31	24	18

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the fuel when the distance is 120.

(b) *negative correlation*

(c) *about 35 (accept 32 to 38)*



8

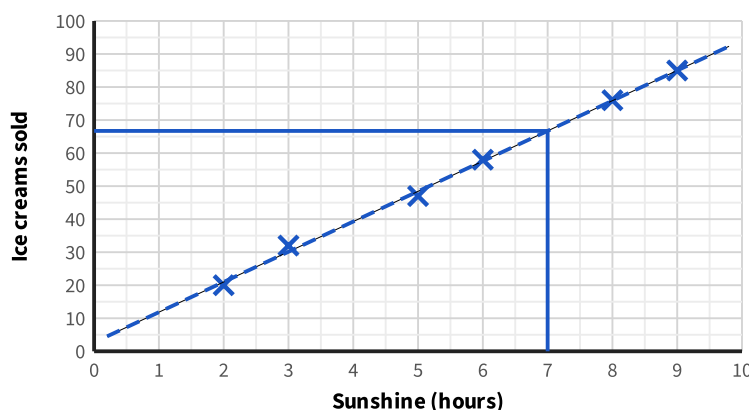
Hours of sunshine and ice creams sold.

Sunshine	2	3	5	6	8	9
Ice creams	20	32	47	58	76	85

(a) Plot the points. (b) Describe the correlation. (c) Draw a line of best fit and estimate the ice creams when the sunshine is 7.

(b) *positive correlation*

(c) *about 67 (accept 61 to 73)*



9

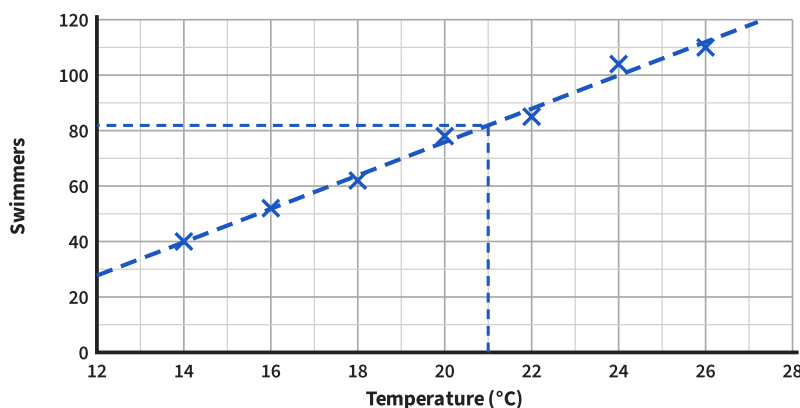
The temperature and the number of swimmers at an outdoor pool on seven days.

Temp (°C)	14	16	18	20	22	24	26
Swimmers	40	52	62	78	85	104	110

- (a) Plot the points. (b) Describe the correlation.
(c) Draw a line of best fit and estimate the number of swimmers when it is 21 °C.

(b) *positive correlation*

(c) *about 82 (accept 74 to 90)*



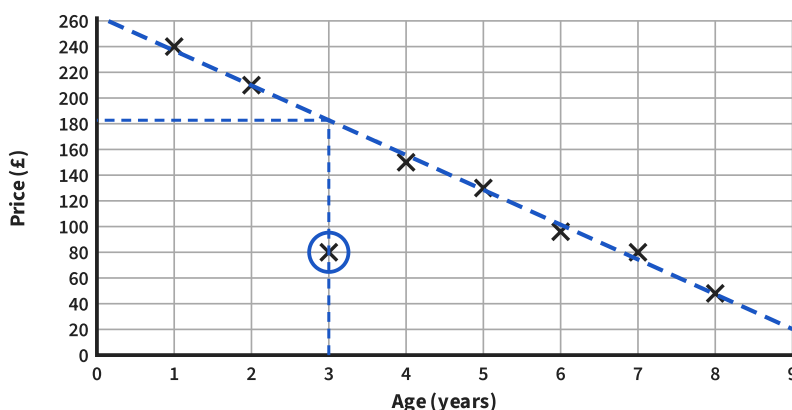
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The scatter graph shows the ages and prices of eight second hand bikes in a shop.

- (a) Circle the point that does not fit the pattern.
(b) Describe the correlation. (c) Ignore that point. Draw a line of best fit and estimate the price of a 3 year old bike.

(b) *negative correlation*

(c) *about £183 (accept £173 to £193)*



11

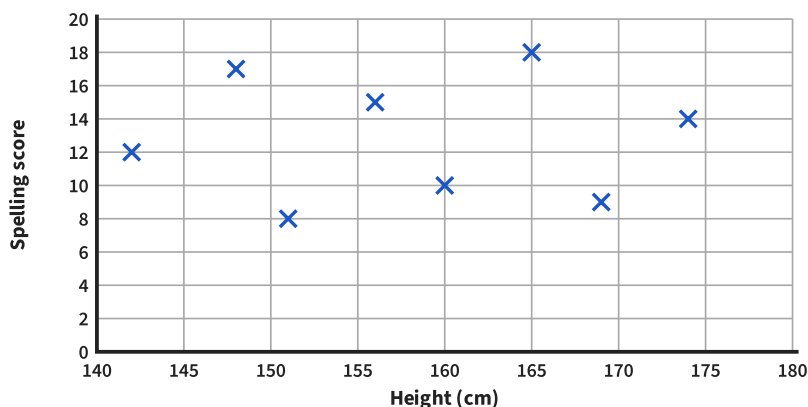
The heights of eight students and their scores in a spelling test out of 20.

Height (cm)	142	148	151	156	160	165	169	174
Score	12	17	8	15	10	18	9	14

- (a) Plot the points. (b) Describe the correlation.
(c) Mo wants to use a line of best fit to estimate the score of a student who is 160 cm tall. Explain why he should not.

(b) *no correlation*

(c) *there is no pattern, so a line would not fit the points*



12

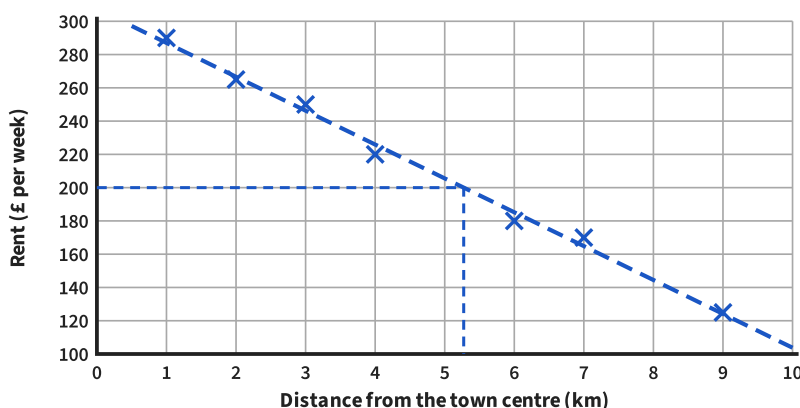
The distance of seven flats from a town centre and their weekly rent.

Distance (km)	1	2	3	4	6	7	9
Rent (£)	290	265	250	220	180	170	125

- (a) Plot the points. (b) Describe the correlation.
(c) Draw a line of best fit. Estimate how far from the centre a flat with a rent of £200 a week would be.

(b) *negative correlation*

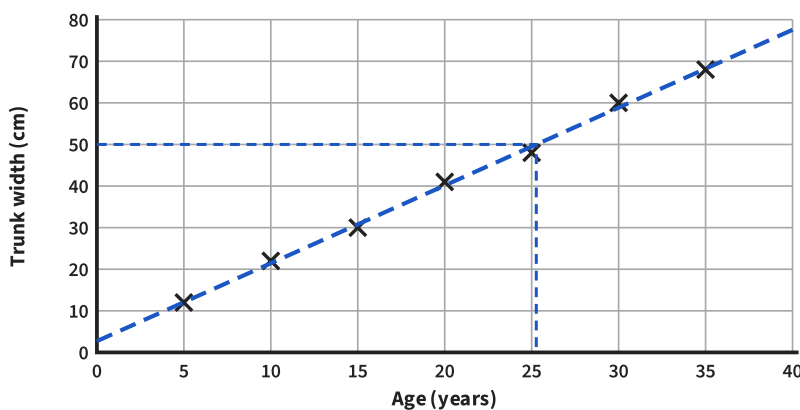
(c) *about 5.3 km (accept 4.8 to 5.8)*



13

The scatter graph shows the ages of seven oak trees in a park and the widths of their trunks.

(a) Describe the relationship between age and trunk width in words. (b) Draw a line of best fit. (c) The park keeper says an oak tree with a trunk 50 cm wide must be over 30 years old. Use your line to decide if she is right.



(a) *the older the tree, the wider its trunk*

(c) *No, it is about 25 years old*

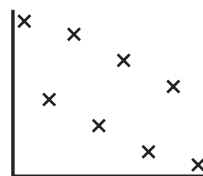
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Here are three scatter graphs.

(a) Which graph shows strong positive correlation? (b) Which shows weak negative correlation? (c) For which graph would a line of best fit give the most reliable estimates? Explain.



A



B



C

(a) and (b) *A and B*

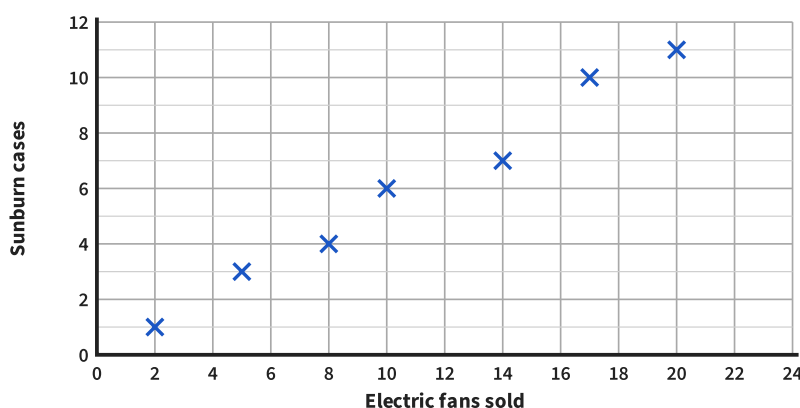
(c) *A: its points lie closest to a straight line*

15

A town records the number of electric fans sold and the number of sunburn cases each week.

Fans sold	2	5	8	10	14	17	20
Sunburn	1	3	4	6	7	10	11

(a) Plot the points. (b) Describe the correlation. (c) Ryan says buying fans causes sunburn. Is he right? Explain.



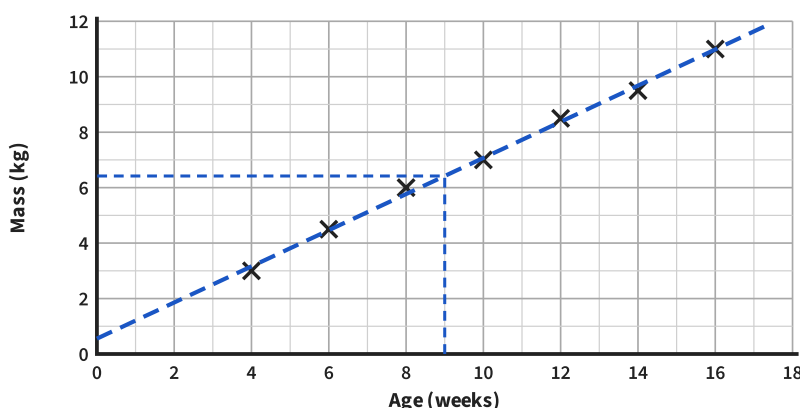
(b) *positive correlation*

(c) *No: both rise in hot, sunny weeks; one does not cause the other*

16

The scatter graph shows the mass of a puppy as it grows.

(a) Draw a line of best fit and estimate the mass of the puppy at 9 weeks. (b) Jake carries on the line and says the puppy will weigh about 70 kg when it is 2 years (104 weeks) old. Explain why this is not reliable.



(a) *about 6.4 kg (accept 5.9 to 6.9)*

(b) *104 weeks is far outside the data; the puppy will stop growing*