

Exercise 5A

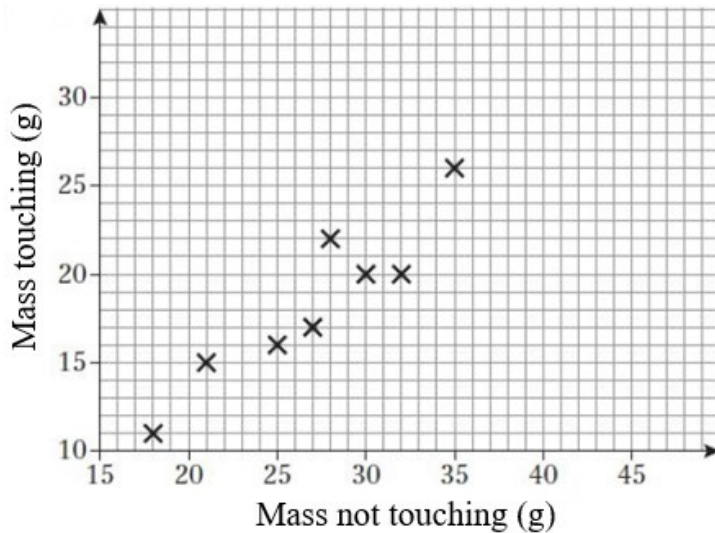
1 a Positive correlation.

b The longer the treatment the greater the hair growth.

2 a There is no correlation.

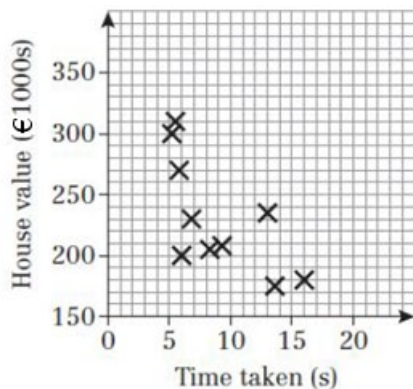
b The scatter graph does not support the statement that hotter cities have less rainfall.

3 a



b It shows positive correlation. Each student's tendency to guess lower or higher than the mean was the same in both tests.

4 a



b There is weak negative correlation.

c For example, there may be a third variable that influences both house value and internet connection, such as the distance from built up areas.

5 a $Q_1 = 0.1, Q_2 = 1.8, Q_3 = 4.9$

$$\text{IQR} = Q_3 - Q_1$$

$$= 4.8$$

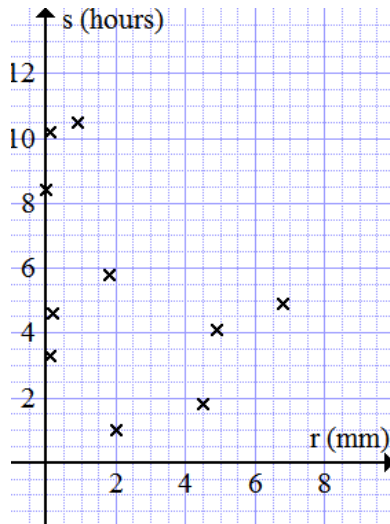
$$Q_3 + 1.5 \times \text{IQR} = 4.9 + 1.5 \times 4.8$$

$$= 12.1$$

Since $22.3 > 12.1$ it is an outlier.

- b i There is no reason to believe that the data collected is incorrect.
 ii 22.3 is an outlier so may not be representative of the typical rainfall.

c



- d There is no correlation.
- e There is a causal relationship between the amount of rainfall and the hours of sunshine. This is because the amount of rainfall is caused by how many hours of sunshine there are. If there were sunshine all day, there wouldn't be any rain. If there were no sunshine, this implies there are clouds all day, so more chance of rain. For this small sample there is no correlation, but you would expect for a larger sample more sunshine = less rain, and less sunshine = more rain.