

Teacher's edition sample

From analysing the overall percentages (on the previous page) we can see that:

- Overall, 52% of the TCE students play sport
- More year 12 students (62%) play sport than year 11 students (38%)
- Year 12 students are over-represented in the sample (62% of respondents)

We could also use percentages to divide the data by year level.

	Year 11	Year 12
Play sport	58%	48%
Don't play sport	42%	52%
Total	100%	100%

These percentages were calculated from the column totals. The number of year 11 students who play sports (11) was divided by the total number of year 11 students (19). $(11 \div 19 = 0.58 \times 100 = 58\%)$

From analysing the year level specific percentages, we can see:

- Among Year 11 students, most play sport (58%) but many do not.
- Among Year 12 students the group is more evenly split
- Suggests that Year 11's are *more likely* to play sport than Year 12 students.



With your teacher:

A community group wants to know how people prefer to spend their weekends. They ask community members whether they prefer outdoor activities (like hiking or mountain biking) or indoor activities (like movies or gaming). The responses are grouped by age: 'Under 20' and '20 & Over'

Complete the two-way frequency tables below by adding the totals to the first table, then converting to percentages in the second table.

	Under 20	20 & over	Total
Outdoor	15	22	37
Indoor	18	45	63
Total	33	67	100

	Under 20	20 & over	Total
Outdoor	15%	22%	37%
Indoor	18%	45%	63%
Total	33%	67%	100%

RED text is a 'teacher only' answer.

The students cannot see this in their books.

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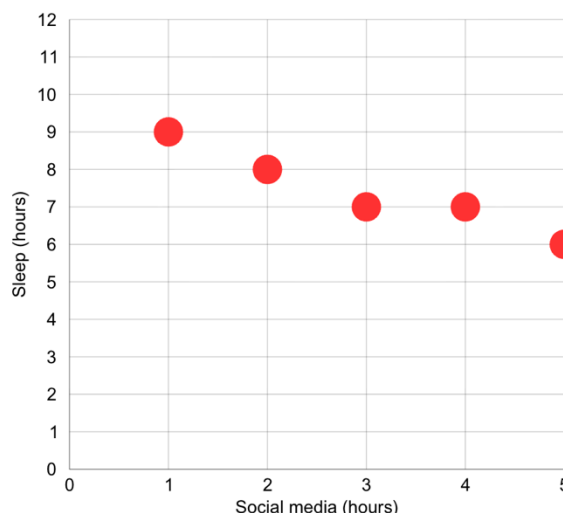


With your teacher:

A group of students recorded the number of hours they spent on social media each day and the number of hours they slept that night. They are curious if the time on social media impacts how much sleep they get.

Their results are as follows:

Social media (hours)	Sleep (hours)
1	9
2	8
3	7
4	7
5	6



Your tasks:

- Determine which column is the independent variable (X axis) and which is the dependent variable (Y axis).

Social media = independent variable (x). Sleep depends on social media usage.

- Prepare a scatterplot from scratch using the graph paper above.

See above.

- Describe the association

There is a strong negative linear association between the hours spent using social media during the day and hours of sleep at night.

- Write a few sentences interpreting the results in the context of the data.

There is a strong negative linear association between the number of hours spent using social media during the day and hour of sleep that night. In context, students who used social media less during the day appeared to sleep better than those students who spent more time on social media.

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With your teacher:

The fitness beep test results of 12 students are shown in the following table together with the number of hours they exercised in the week leading up to the test.

Hours of exercise	1	3	4	2	5	0	6	3	7	4	8	2
Beep test level	3	5	6	4	7	2	9	5	10	6	11	3

1. Plot the data on the scatterplot.

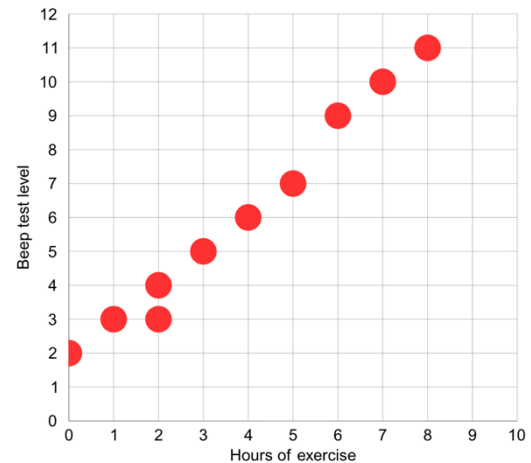
See graph

2. What type of correlation do you think is involved?

Strong positive correlation

3. Use your calculator to find the correlation coefficient.

0.9911



4. Write a conclusion based on your correlation coefficient.

There is a strong positive correlation between the hours of exercise leading up to the beep test and the level achieved in the test. The more hours exercised, the higher the beep test level.



With your teacher: Write a suitable conclusion based on the correlation coefficient for each of the following:

1. A psychologist studies the relationship between hours of sleep per night and student concentration scores on a memory test. She finds a correlation coefficient of **0.62**.

There is a moderate positive correlation between the variables. There is some evidence to show that the greater number of hours sleep per night, the higher the scores achieved on the test.

2. A sports scientist investigates the relationship between the number of hours spent at soccer training per week and players' fitness test results. He finds a correlation coefficient of **0.81**.

There is a strong positive correlation between the variables. The more hours spent at soccer training, the higher the fitness test results.