We need to talk about maths!

- If you thought that you would never have to do maths again after GCSE, you are wrong!
- It is everywhere!
- Any decent employer will expect you to have good maths grades.
- 10% of the psychology course is maths, so here are some maths questions for you to do!
- There are some tasks to complete here. Put these on paper and bring to your first Psychology lesson in September.

A psychologist obtained a volunteer sample of 22 students aged 17 years from a sixth form centre. Participants were split into two groups and asked to complete a puzzle task as quickly as possible. Group A was to find 10 differences in a 'spot the difference' puzzle while working in silence. Group B was to find 10 differences in the same 'spot the difference' puzzle while listening to music through headphones.

Table 1: Times taken (in seconds) to complete Group A (silence) and Group B (music)

Group A (silence)	Group B (music)
67	82
45	70
58	70
43	59
72	77
90	105
101	90
37	59
54	83
63	89
66	71

Task: work out the mean, median and mode for each data set.
Work out the range.

What can you conclude from the results?

Answers

Group A

- Mean - 63.27
- Median - 63
- Mode - no mode
- Range - 64

Group B

- Mean - 77.73
- Median - 77
- Mode - 59, 70
- Range - 46

We can conclude from the results that the participants in the music condition took longer to complete the puzzle - 77.73 seconds, than those in the silence condition - 63.27 seconds. We might conclude that the music was a distraction for them.

The narrower range of the music condition of 46 tells us that data set is more reliable than the silence condition of 64 because of outliers within that data set.

- Other maths type questions include calculating percentage increase and decrease, comparing standard deviation scores, reading statistical tables and more.
- You will, of course, be shown how to do these things!

A psychologist is using the observational method to look at verbal aggression in a group of children with behavioural difficulties. Pairs of observers watch a single child in the class for a period of one hour and note the number of verbally aggressive acts within ten-minute time intervals. After seeing the first set of ratings, the psychologist becomes concerned about the quality of inter-rater reliability. The tally chart for the two observers is shown in **Table 2**.

Table 2: Observation of one child – number of verbally aggressive acts in ten-minute time intervals

Time slots	0–10	11–20	21–30	31–40	41–50	51–60
Observer A	2	5	0	6	4	3
Observer B	4	3	2	1	6	5

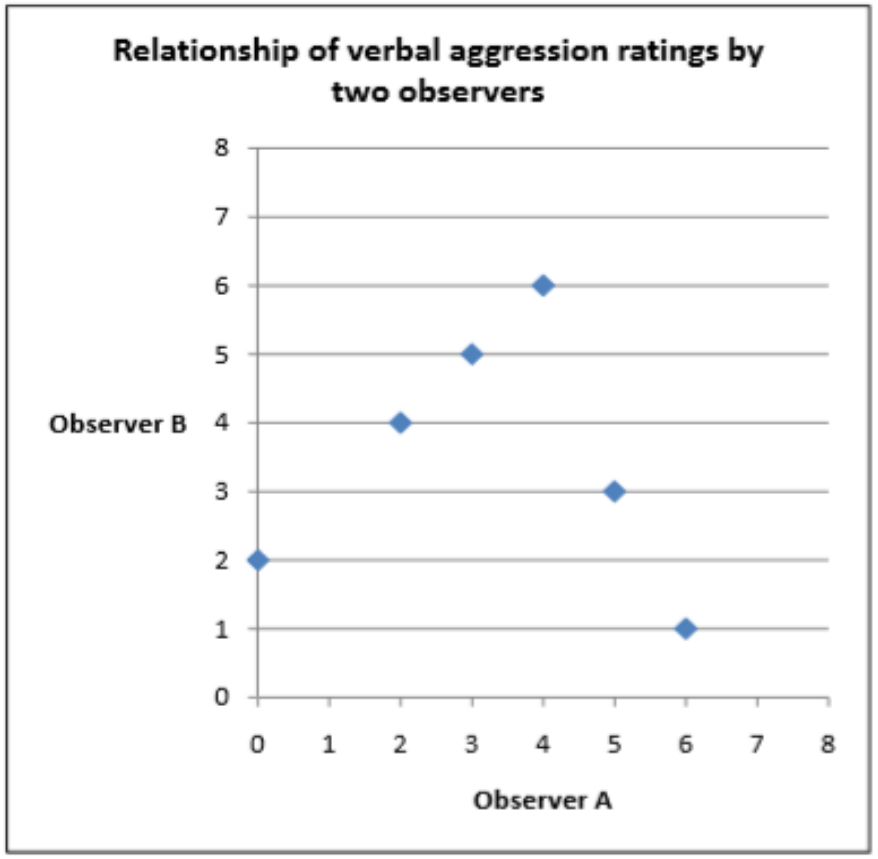
Task: Use the data in **Table 2** to sketch a scattergram. Label the axes and give the scattergram a title. *(4 marks)*

Task: Using the data in **Table 2**, explain why the psychologist is concerned about inter-rater reliability. *(4 marks)*

Answers

- it is clearly a sketch of a scattergram
- the data are appropriately plotted
- the labels of the axes and the title taken together show full understanding of the nature of the data.

If you got this right – great!
Most people get it wrong!
They draw a line graph instead, but the clues are there!



Why is the psychologist concerned about inter-rater reliability?

The observers should be recording similar scores in all time slots as they are watching the same child, but if we look at time slot 31-40 minutes there is a huge difference between the observations count - 6 aggressive acts compared to 1. There should be a strong positive correlation between both observers in how many aggressive acts they see.

A further question could ask how can inter-rater reliability be improved – better training of observers, making sure observers are clear was an aggressive act is etc.

- Thank you for showing an interest in psychology.
- Have a great summer!
- We hope to see you in September!