## Worksheet: Correlation between age and self-confidence

This part of the results is used to show the main trends in the data. First enter your data into the raw data table. Then, plot your data on the scattergraph. Label your axes: put age on one of the axes and confidence on the other.

Title: <u>*A scattergraph to show the relationship between age and self-confidence*</u>

RAW DATA TABLE		
Participants	Age	Self-confidence
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
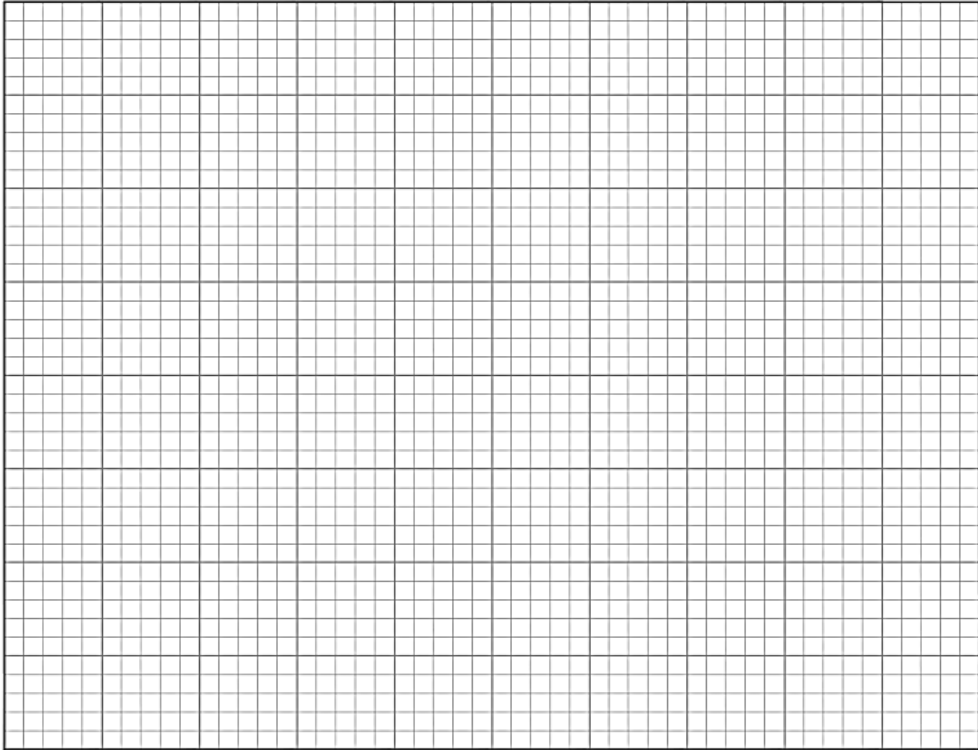
CONCLUSION

Explain here what you can directly infer from your findings. Does it look as though you have a positive correlation, a negative correlation, or no correlation?

A correlation coefficient is used to provide the researchers with statistical information about the relationship between two co-variables. To determine the correlation coefficient you need to complete this formula by substituting in the correct numbers.

$$r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

- Complete the table below to find $\Sigma\, d^2$

Ps	Co-variable 1	Co-variable 2	RANK 1	RANK 2	d	d^2
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
			(give your answer to 2 d.ps)		$\Sigma\, d^2 =$	

1) Enter your two sets of data from each participant in the columns marked Co-variable 1 and Co-variable 2.
2) In the column marked RANK 1, Rank the data from Co-variable 1 (age) from lowest to highest, so the lowest number gets a rank of 1, the next lowest rank 2 etc. If you have a tie with several scores the same, give all these numbers their normal rank then work out the *mean rank score* for these scores. These scores receive this mean as their rank
3) Repeat the process in the RANK 2 column with the data from the co-variable 2 (confidence) column.
4) In the *'d'* column, work out the *difference* between the rank scores in the columns 'RANK 1 & 2'
5) In the d^2 *square* column, square each difference score and add it to the last column

6) Finally find the total of all the squares - Σ *d²* *(give your answer to 3 d.ps)*

The value of Σ *d²* can now be substituted into the formula for Spearman's Rank correlation coefficient below.

$$r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

> For further help see
> http://www.wikihow.com/Calculate-Spearman's-Rank-Correlation-Coefficient

Calculate the value of r_s for your data in the space below.
Show ALL substitutions and working out.

> *n* = the number of participants you have.

 Your *calculated* value of r_s should be somewhere between 1 and -1. If it is not, then you have made an error in your calculation, so you will need to double check your calculation

A correlation coefficient can be any number between **-1 and +1**. This number tells us the **strength** of the correlation **and** the **direction** (whether it is positive or negative).

A good rule of thumb is to consider of 0.0 to 0.3 as weak, 0.3 to 0.7 as moderate, and above 0.7 as strong. Correlation coefficients of +1 and -1 are perfect correlations.

Diagram to show Correlation Coefficients

-1.0 *Perfect negative*	-0.5	0 No correlation	+0.5	+1.0 *Perfect postive*
Strong		Weak	Weak	Strong