

## HOW TO CONSTRUCT A GRAPH IN 10 EASY STEPS

1. Identify variables
  - A. Manipulated (independent) variable is what the experimenter controls
  - B. Responding (dependent) variable is what changes relative to the manipulated variable
2. Determine what kind of graph you need
  - A. Scatterplot (XY graph) – compares two variables that are related (cause and effect data)
  - B. Bar graph – compares groups of information
  - C. Pie graph – circular graph that shows how a whole is divided up into percentages
  - D. Line graph – “connect the dots” used to show how data changes over time
3. Draw an x- and y-axis with a ruler
4. Determine variable range and axis scale
  - A. Subtract the lowest data value from the highest data value to find the range. Do this for each variable separately.
  - B. Use this formula to determine a scale:  
Value per box on axis =  $\frac{\text{Data range}}{\text{Number of boxes on axis}}$
5. Number and label each axis
  - A. Manipulated variable goes on the x-axis (horizontal)
  - B. Responding variable goes on the y-axis (vertical)
  - C. Remember to include units in the axis labels
  - D. Spread out the graph to use most of the space
6. Plot the data points – use dots if it’s a scatterplot or line graph
7. Draw the graph – on a scatterplot, sketch a smooth curve or line that “best fits” the data points; line graph, connect the dots
8. If the graph has more than one set of data, provide a “key” to identify the different lines
9. Title the graph – the title should clearly tell what the graph is all about
10. Read the final graph to make sure it makes sense