**GRAPHING REFERENCE**

**6 Rules of Graphing**

**1. TITLE:**Always have a title! It communicates what your graph is about.  Since it is a title, **ALL IMPORTANT WORDS SHOULD BE CAPITALIZED!** Use the following format:

**The Effect of** (Independent Variable) **on** Average (Dependent Variable)

**2. BAR GRAPH or LINE GRAPH?:** Determine if you will construct a bar graph or a line graph. You don’t get to just choose which one you prefer to make!

**Bar graphs**: Make this graph if your IV is **qualitative, discrete, or category** data. **Qualitative** data includes categories or words that describe the quality of something. **Discrete** data is data that is separate and does not overlap. The spaces or intervals between the categories have no meaning. Examples of discrete data are: color of car, types of soda, kind of fruit. **Discrete data can only be displayed as a bar graph.**

**Line graphs:** Make this graph if your IV is **quantitative and continuous**. **Quantitative** data includes numbers and measurements. Most quantitative data is continuous, but not all. **Continuous** data is data that has points with meaning in between the chosen intervals. If data could have been collected in between your chosen intervals, then the data is continuous. Examples of continuous data are: a person’s height, temperature of water, number of pennies in a cup. **Continuous data should be displayed as a line graph.**

**3. LABEL BOTH AXES (and include units!):**

1. X axis (horizontal): Label the IV. Include units for a line graph!
2. Y axis (vertical): Label with Average DV. Include units!

**4. ALWAYS START AT ZERO WHEN NUMBERING BOTH AXES!**

1. **MAKE SURE YOUR INTERVALS ON EACH AXIS ARE EVENLY SPACED:**
2. **Bar Graph**:
   * Make a bar for each category and label it on the X-axis.
   * Then number the Y-axis. To calculate the increments, take your highest value of your DV and round up to a close, but easy to use number. For example, if my highest value is 283, I might set the highest number on my graph as 300.
   * Then divide the highest number by the number of lines you have on your graph. Ours will ALWAYS be 10 this year! 300 divided by 10 is 30, so I would have increments of 30 on my Y-axis.
3. **Line Graph**:
   * Number both axes for a line graph.
   * **DO THE FOLLOWING FOR EACH AXIS SEPARATELY! YOU DO NOT HAVE TO USE THE SAME INCREMENTS FOR EACH AXIS!**
   * To calculate the increment for the X-axis, take your highest value of your IV and round up to a close, but easy to use number. For example, if my highest value was 43, I might set the highest number on my X-axis as 50.
   * Then divide the highest number by the number of lines you have on your graph. Ours will ALWAYS be 10 this year! 50 divided by 10 is 5, so I would have increments of 5 on my X-axis.
   * Repeat these steps for the Y-axis. But remember you use your highest value of your DV to determine the increments. You DO NOT have to use the same increment you used on the X-axis.
4. **Graph ONLY the AVERAGE DV!** Do not graph all of the repeated trials. Draw bars for each category if you are making a bar graph. For a line graph, plot the data points and then connect the dots.

**SAMPLE BAR GRAPH**

**\*Use when the IV is discrete/qualitative/categories\***

The Effect of (IV) on Average (DV)

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| Avg. Dependent Variable (unit) |  |  |  |  |  |  |  |  |  |
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| 0 |  |  |  |  |  |  |  |  |  |

Category Category Category

Independent Variable

**SAMPLE LINE GRAPH**

**\*Use when the IV is quantitative and continuous\***

The Effect of (IV) on Average (DV)

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| Avg. Dependent Variable (unit) |  |  |  |  |  |  |  |  |  |
| 0 1 2 3 4 5 6 7 8 9 10 |  |  |  |  |  |  |  |  |  |
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0 5 10 15 20 25 30 35 40 45 50

Independent Variable (unit)