Analyzing Your Data and Drawing Conclusions Worksheet

Instructions: Practice different ways to calculate and analyze data by completing the sections below.

1. **This example shows data from an experiment testing whether spinach stays fresh longer in a new produce container versus the current cafeteria container.**

	New Produce Container (length of time without mold)	Current Cafeteria Container (length of time without mold)
Trial 1	5 days	3 days
Trial 2	4 days	2 days
Trial 3	4 days	3 days
Trial 4	7 days	3 days
Trial 5	6 days	5 days

   a. Calculate the mathematical average or mean of the data above. The average is calculated by adding all of the measurements in one group, then dividing by the number of measurements.
      - Average number of days for the new produce container 5.2 days
      - Average number of days for the current cafeteria container 3.2 days

   b. Find the median for the data above. The median is the value at the midpoint of the group. The easiest way to find the median is to first sort each group of measurement in order from the smallest to the largest.
      - Median value for the new produce container 5 days
      - Median value for the current cafeteria container 3 days

   c. Find the mode for the data above. The mode is the value that appears most frequently in the group of measurements.
      - Mode value for the new produce container 4 days
      - Mode value for the current cafeteria container 3 days

2. **To calculate and analyze your data correctly, make sure all of the units of measurement are on the same scale. Practice converting the following units of measurements.**

   a. Minutes to seconds
      - 2 minutes 13 seconds 133 seconds
      - 5 minutes 26 seconds 326 seconds
      - 3 minutes 12 seconds 192 seconds

   b. Liters to milliliters
      - .5 L 500 mL
      - 2.4 L 2400 mL
      - 1.6 L 1600 mL

Your last step in your Mission Folder is to draw your conclusions, which summarizes whether your experiment or survey results support or contradict your original hypothesis. Summarize your conclusion below:

Students' answers will vary.

Now complete the following checklist, referencing your conclusion statement(s) for each question:

What makes for good conclusions?	Answer
Did you summarize your results and use them to support the findings?	Yes / No
Did your conclusions state that you proved or disproved your hypothesis?	Yes / No
If appropriate, did you state the relationship between the independent and dependent variable?	Yes / No
Did you summarize and evaluate your experimental procedure, making comments about its success and effectiveness?	Yes / No
Did you suggest changes in the experimental procedure and/or possibilities for further study?	Yes / No

To determine whether you have written quality conclusions, you should have answered "Yes" to every question.

Let's test your familiarity with writing conclusions further. Read the following results statements below from an experiment testing and comparing the voltage of various batteries.

According to my experiments, the Energizer maintained its voltage (dependent variable) for approximately a three percent longer period of time (independent variable) than Duracell in a low current drain device. For a medium drain device, the Energizer maintained its voltage for approximately 10 percent longer than Duracell. For a high drain device, the Energizer maintained its voltage for approximately 29 percent longer than Duracell. Basically, the Energizer performs with increasing superiority, the higher the current drain of the device.

The heavy-duty non-alkaline batteries do not maintain their voltage as long as either alkaline battery at any level of current drain.

Use the word bank to fill in the blanks for the following conclusion statements using the results statement above:

1. My hypothesis was that Energizer would last the longest in all the devices tested. My results did/did not support my hypothesis.
2. My hypothesis was correct, for my results prove that heavy-duty alkaline batteries do not maintain their voltage as long as either alkaline battery at any level of current drain.
3. The dependent variable, the Energizer battery, maintained its voltage for approximately a three percent longer period of time (the independent variable) than the Duracell battery.
4. To further my study, I might involve testing batteries at different temperatures to simulate actual usage in very cold or very hot conditions.

Source: http://www.sciencebuddies.com

Duracell battery	**further**	**Energizer battery**
hypothesis	**support**	**correct**