Part 1

Please read and compare the following passages. The first passage is poorly written and seems to confuse rather than clarify. The second passage is a condensed version that eliminates material that is redundant or unnecessary for full understanding of the topic. (Note: You are not responsible for any of the scientific information in these first two passages. It is simply presented here to make some points about writing!)

First Example:

(Note: a grammar checking program found nothing wrong here!)

The amount of protein contained in a sample is often determined using a technique of measurement, called the Lowry protein assay, that has two steps in it. The first step is to add an alkaline copper solution to the protein sample. This alkaline copper solution has copper in it that can bind to peptide bonds. When it binds to peptide bonds, the color of the solution turns color from a turquoise, which is the color of the alkaline copper solution, to a light blue, the color of the copper-complexed protein. The more amino acids in the solution, the darker blue the color will be. The second step is to add a reagent called the Folin reagent. This reagent is a phosphomolybdate solution that reacts to the copper-complexed peptides and to aromatic ring structures on the "R" group of amino acids. Amino acids make up proteins. While there is no true "average" size of proteins, many range in the 150-250 amino acid length range. When the Folin reagent reacts with protein, you get a much darker blue color than with just the alkaline copper solution. A problem with this Lowry protein assay is immediately apparent! While the number of peptide bonds in a protein solution is a good measure of the amount of protein there (so the initial blue color after adding the copper solution is a good measure of protein), the amount of aromatic R groups on amino acids is very variable. That is, one protein may have many aromatic R groups and another may have few. If you have two solutions, one with proteins that have many aromatic R groups and one with proteins that have few aromatic R groups, the colors will be very different (the first solution will be much darker than the second) and you will think the solutions have different amounts of protein when they may, in fact, have the same. So why use the second reagent? It makes the assay much more sensitive even though you have to take the results with a grain of salt. This is why it is important to use a good standard for comparison. The good standard would be one whose concentration of aromatic R groups is similar to that of your unknown solution. Lacking information about this unknown, we often just use bovine serum albumin as a standard… along with that grain of salt.

Second Example:

The Lowry protein assay is a two-step procedure for determining the protein concentration of a solution. In the first step, copper in an alkaline solution complexes with peptide bonds of proteins giving a light blue color. The second step requires the addition of a phosphomolybdate solution called Folin reagent. This reagent reacts with both the copper-complexed peptides and with aromatic R groups on proteins giving a dark blue solution. This second reaction increases the sensitivity of the assay but decreases the accuracy because the concentration of aromatic R groups is variable among proteins. Using an equivalently composed protein standard will minimize this problem. With unknown solutions it is common to use bovine serum albumin as the standard and understand the limitations of the assay.

Part 2:

Please read the following passage written to describe the basic use of a microscope to a new microscope user. Your task is to evaluate the passage and then to re-write it to fix the problems you have identified. Record your evaluation of the passage in the chart provided on the next page.

The passage:

(Note: a grammar checking program found nothing wrong here!)

To use a microscope, you first have to pick it up from its storage place. Be sure that you are holding it right. I mean by that that you will hold the neck of the stand with one hand and support the bottom of the microscope with the other hand. And don't tip the microscope upside down because the oculars that you look through are not glued in or anything.

A microscope is a piece of laboratory equipment used to look at objects that are very small. These objects, many of them cells in biology but could be other things in other areas of study are too small to see or too small to see well with the naked eye. Thus we use the microscope. The compound microscope has two sets of lenses, the objective lenses and the ocular lenses and each lens magnifies the image of the specimen some. The oculars we have on our microscopes magnify the image ten-fold (10X) and the objective lenses range from 4X to 100 X and to get the total magnafacation of the microscope you have to multiply the magnafacation of the ocular by that of the objective.

But magnafacation is not enough. You also need resolving power. Otherwise all you will see is a big blur. Resolving power is an optical characteristic that allows you to distinguish two separate objects as separated from each other. Now that you have the theoretical knowledge to work with the scope, one can set the microscope up by plugging it in and putting a specimen (on a slide, of course) into the metal thing on the microscope that holds the slide. Then one would use the coarse and fine focus knobs to focus in on the specimen until it is in focus. If the oculars are too close together so your eyes go buggy, you can pull them apart (or push them together) to get the best interpupallary distance for your eyes. You can also adjust the focus of each eye separately by using the diopter control found on one of the oculars. Then you can draw your specimen or whatever it is you were going to do with it. Be sure to return the microscope safely to its storage space, with the cord wrapped around the base and the highest objective in place.

Evaluation Grid

Reviewer:

Mark your evaluation on the sliding scale from poor to excellent.

Write specific comments directly on the paper.

	Poor Marginal Adequate Good Excellent
Thoroughness	
Accuracy	
Supportive documentation (graphs, data, illustrations)	
Level of writing for a college student	

Now that you have evaluated the passage, rewrite it to make it better. Use the space below.

Exchange papers with another student and use the grading grid below to evaluate the rewritten passage. Be sure to consider the following questions:

- Is the passage better organized?
- It is more concise?
- Is anything important missing?
- How is the grammar?
- Are there superfluous phrases?

Evaluation Grid

Reviewer:

Mark your evaluation on the sliding scale from poor to excellent.

Write specific comments directly on the paper.

	Poor Marginal Adequate Good Excellent
Thoroughness	
Accuracy	
Supportive documentation (graphs, data, illustrations)	
Level of writing for a college student	

The following material was adapted from the University of Minnesota Biology 1002 Lab Manual in a section written by Dr. Lee-Ann Kastman from the Department of Rhetoric. It is re-printed with her permission.