Approaching a Problem

For many students, approaching a problem can be difficult. Whether it be in math, science, or in everyday life, we are faced with problems every single day. It is necessary to equip ourselves with the tools necessary to solve these problems we encounter. This workshop is designed to help you approach any problem with confidence and provide you with skills necessary to apply what you have learned. Although this was designed specifically with math and science problems in mind, many of these strategies can be applied to any problem in any subject or field that you might encounter.

Where do I Begin?

This is perhaps the most common question asked by students when facing a problem. It is also the most important hurdle to overcome when approaching a problem. Many students are stopped dead in their tracks when they encounter a problem, because they do not know where to begin. We will later discuss a few strategies, steps to take while solving a problem, but we must first defeat the initial shock felt when faced with a problem we do not initially understand.

The first thing you should do is take stock of what information you are given. In the case of a word problem, it is usually a good idea to write down any values that the problem states and assign it a variable. Doing this can quickly turn a word problem into a regular, perhaps clearer, mathematical problem.

What Steps do I Take?

Now that we have gotten over the initial shock of starting the problem, let's consider some strategies to help us proceed. Breaking down the problem-solving process into several manageable steps seems a good place to start.

Read and Understand the Problem

You must read and reread the problem until you understand what you are being asked to do.

Write Down All Given Information

Assign a variable to each quantity and determine which quantity is your unknown. If there is any information you feel may be missing, reread the problem and verify that you have not missed any important information. Some problems might be solved using a table. If this is the case, build the table and fill in the information that you know. It is also helpful to draw a diagram or schematic of the situation.

Identify Important Concepts and Formulas

What formula should you use? What concept does this problem demonstrate? Does the problem look like any other you've encountered before? All of these are excellent questions to ask yourself when determining how to approach a problem and identifying what tool to use.

Devise a Strategy

If the problem is large or has multiple steps, break it into smaller pieces. Most students find it helpful and easier to deal with a problem once it is broken into more manageable parts. Consider whether or not you have seen this type of problem before and can apply a similar method to solve it.
Estimate an Answer

You should have some idea of the type of answer for which you are looking. Is it a big number? A small number? A positive number? A negative number? Are there any answers that wouldn’t make sense? This idea is especially important in a science course and is extremely useful when completing a multiple choice exam, allowing you to eliminate possible answers.

Solve the Problem

You are now ready to solve the problem. Now that you understand what the problem is asking for, you may begin by using the strategies devised earlier in the process. Examine the information assembled from the problem and apply the concepts and formulas to arrive at a final solution.

Check Your Answer

Does your answer agree with your estimate? Does your answer make sense? If a formula was used, plug your answer back into that formula in order to verify your calculation.

How Can I Know What Strategies to Use?

Practice! Do as many problems of every type you might encounter. If your instructor assigns the odd problems as homework, do the even problems as well. The more problems you attempt, the more accustomed you will be to type of language used in each. You will also be able to more readily recognize the methods used in each type of problem. You should, however, be careful not to simple memorize the steps taken. You should concentrate on the general methods and techniques rather than the specific steps used in each question.