Problem Solving Study Cycle

1. Familiarize
   - What are we learning? How can I define it?
   - Do I have a general understanding of what it is?
   - Where can I go to learn more? (i.e. textbook, YouTube, Professor’s office hours, classmate, etc.)

2. Connect
   - Identify the new concept(s) you are learning. Develop a broad understanding of the new material.
   - Connect the new information to material you have already learned. Don’t memorize or take anything as fact, ask “why” and seek to understand the answer. Think about how the new material may be applied.

3. Apply
   - Begin to apply your knowledge to HW or other practice problems.
   - Scrutinize every problem you do. Think about how and why you’re doing each step.
   - Assess each solved problem. Think about how it could be modified or made more challenging.

4. Analyze
   - What concepts, formulas or rules did I apply when answering this question?
   - Why did I use them?
   - What were the steps that I did? Why did I do each step?
   - Could I teach the process to someone else?

5. Evaluate
   - How can I develop a better understanding of this concept?
   - What are some ways this concept can be applied?
   - How is new material related to the material I’ve learned in the past?
   - Do I need to review old material?
   - Ask “why?” when learning ideas
   - What practice problems are available to me?
   - What concepts do I need to know to answer each question? Do I know the concepts well enough to answer confidently?
   - If I get stuck, what tools can I use to help me? Do I understand how/why I got unstuck?
   - Are there other ways the problem could be solved?
   - What are the differences and similarities between this problem and others?
   - Can the problem be modified to become more challenging?
   - What questions related to this problem might the professor ask on an exam?

Success in problem solving classes requires an understanding of the material before you try the HW. Spending time learning concepts and how they relate to each other will make doing the HW faster and easier.

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