

MAED 548 Problem Solving Journals

Use Polya's 4-step problem solving method as a guide. For example:

Understand the Problem: You should restate the problem in your own words demonstrating you understand exactly what it is you are being asked to do. If you feel there are any special questions, conditions, or assumptions that need to be asked, stated, or made (e.g. Must the pizza cuts be straight?) do so here.

Devise a Plan: What is your plan of attack for this problem? Why do you believe your choice is appropriate? You should be thinking about what you are going to do in order to solve the problem and **why** you believe your plan is appropriate. Did any special conditions lead you to choose this strategy?

Implement the Plan: Basically, this is a recode of your attempts to solve the problems using your plan. Write down what you do. Also keep a record of your thinking. Include pictures, tables, calculations etc. Develop a narrative explaining what worked, what didn't work, etc. Keep track of your thoughts as you are implementing your plan. Did you have any "light bulb" moments while implementing your plan that led you to alter your plan? You need to be aware of what you are thinking – this is metacognition – and how you react when you reach obstacles.

Look Back: Assess the reasonableness of your solution if in fact you arrived at one! Discuss what went right or wrong, any revelations you had during the problem solving process, and any other insights you might have. Be able to *justify your solution* – simply stating that you think your solution is correct because that is all you could come up with is not good enough. Thinking about the justification for your solution can lead to new realizations and insights which in turn may lead to the formulation of a new plan, which may lead ultimately to a better strategy and final solution.

While arriving at a correct solution is a goal, it is not the only goal of this kind of activity. Why am I asking you to participate in this type of activity and what relevance does it have to your future plans of teaching mathematics? Can this type of activity be modified to other subject areas and grade levels? How does this type of activity fit into the NCTM and Common Core Standards? How does a problem such as this fit into assessing student learning? These are the types of issues you need to be thinking about as future teachers.

When completing these write-ups, please keep in mind the following:

- 1) Length of the journal is not important – it will be as long or short as it needs to be. If your first attempt was successful, then your journal will probably be shorter than a person who struggled with the problem for a long time. Once you have decided on your solution to the problem, include your final solution on a separate page as you would on a test or hand-in assignment.
- 2) Your journals should reflect all of your attempts to solve the problem not just the final successful attempt or first failed attempt. It should be a complete record of your problem solving efforts.
- 3) This kind of activity is best solved over a period of time. Do not wait until 10:00 p.m. the night before a journal is due to try and start solving the problem. Give it shot early. Come back to it. Think about the problem as you walk to your next class – great ideas occur at unexpected times.
- 4) I would prefer the journals to be typed but that is not a necessity. However, part of the grade will be based on whether or not your journal is neat, legible, complete, grammatically correct, contains no spelling errors, easy to follow... While these assignments are not formal research papers, they are not to be taken lightly either.

If you have any questions please speak to me. One advantage of starting this kind of activity early is that you can come to me and say, "Dr. P., this is what I tried, this is what happened so then I did this but now I'm stuck. How about a hint."