**Polya’s 4 Steps for Problem Solving**

**Problem #2**

1. **Understanding the Problem**
   * **Restate the problem in your own words**: Carefully analyze what the problem is asking. Identify the key information given and what the question requires you to find.
   * **Key Questions**:
     + What do I already know?
     + What is missing?
     + What is the goal?
2. **Devise a Plan**
   * **Strategies to Use**:
     + Look for patterns, formulas, or similar problems you’ve solved before.
     + Decide which mathematical operations or formulas are necessary.
     + Use visual aids (draw diagrams, graphs, or charts) if needed.
   * Example Guidance for a Student:  
     *"Begin by identifying what operations or relationships are involved. Write down any formulas you think might apply and organize your information clearly to avoid confusion."*
3. **Carry Out the Plan**
   * **Solve step by step**: Execute the plan methodically. Show every calculation or logical reasoning to ensure clarity.
   * **Track progress**: Pause after each step to confirm that it aligns with the goal of the problem.
4. **Check Your Work**
   * **Review Your Solution**:
     + Does the answer make sense based on the context of the problem?
     + Re-check calculations to spot any arithmetic or logical errors.

**Problem #5**

1. **Understanding the Problem**
   * Break the problem into manageable parts. Identify unknowns, constants, and the relationship between variables.
   * Write down the problem as a clear mathematical statement if possible.
2. **Devise a Plan**
   * Consider strategies such as:
     + Working backward if the final answer is given.
     + Using substitution, elimination, or comparison if solving a system of equations.
     + Breaking the problem into smaller sub-problems.
   * Example Guidance for a Student:  
     *"Think about how you can simplify the problem or what techniques you've learned that apply to this situation. Create a small example or test case to ensure you understand the problem setup."*
3. **Carry Out the Plan**
   * Implement the steps identified in your plan. Write each step clearly to keep track of your thought process.
4. **Check Your Work**
   * Verify if the solution fits the requirements. Test your answer by substituting it back into the original equations or conditions of the problem.
   * Reflect on whether the solution is reasonable and if alternative methods yield the same result.

**Characteristics of a Good Math Explanation**

* **Clarity**: Use precise and simple language. Avoid jargon unless it’s necessary.
* **Step-by-Step Details**: Show all your work with explanations for each step.
* **Relevance**: Focus on the problem’s key aspects and avoid unnecessary information.
* **Verification**: Demonstrate how the solution satisfies the problem.

**Deliverable Format**

When submitting your work, follow this format for each problem:

**Problem #:** Restate the problem here.

1. **Understanding the Problem**  
   Write a brief explanation of how you interpreted the problem.
2. **Devise a Plan**  
   Outline the plan and provide reasoning for the chosen strategy.
3. **Carry Out the Plan**  
   Show your work step by step.
4. **Check Your Work**  
   Confirm the accuracy of your solution and explain how it fits the original question.