

HOW TO SOLVE IT: ***Questions to Ask Yourself When Problem Solving***

Step 1: Understanding the Problem

- ✓ What information have I been given? What information do I need to find? How would I restate the problem in my own words? What type of problem is this? Have I seen a similar problem before? Is there a similar problem in the textbook? What characteristics of the given information jump out as potentially important? Why might they be important? Do I fully understand the setup and what is required of me? If not, what can I do that would help me better understand this?
- ✓ Can I visualize this problem? Can I draw a figure that illustrates the problem. Introduce suitable notation? Separate the various parts of the condition? Can I write them down?
- ✓ Do not move on to step 2 until you feel sure you understand the problem! Can I try to explain this problem to someone else? How far can I go before I am stuck?

Step 2: Devising a Plan

- ✓ Initial Ideas: Do I have any initial ideas as to how I might possibly solve this problem? What other information can I derive from the given information? How have I solved a similar problem in the past?
- ✓ Following up on initial ideas: Where would this idea get me? How would it help me get closer to the answer? What would I do next after this idea? Does the idea make sense?
- ✓ Troubleshooting: Can I think of a simpler version of this problem that is easier to solve? How would I solve that problem? Can I break this problem into smaller parts that are easier to solve? Have I considered all pieces of the given information? What other ways might I approach this problem?

Step 3: Carrying Out the Plan

- ✓ Was I successful in what I intended to do? Do things look correct? Can I prove it?

Step 4: Checking Your Answer

- ✓ Verifying your Answer: Does my answer make sense? Is it plausible? Can I substitute my answer for the unknown in the problem? Does my answer match up with the given information? Does my answer have the right units?
- ✓ Learning from your solution: Can I look back and see a simpler way to solve this problem? Can I succinctly summarize the approach I used to solve this problem? Might I be able to use the result, or method, for some other problem?
- ✓ Why was I asked to solve this problem? Try to put the process of solving that problem into the context of the course.

Cited and adapted materials from: Polya, G. (2014) How to Solve it. Princeton, NJ. Princeton Press and The McGraw Center for Teaching & Learning, Princeton University