Heuristics: Solving the Problem

According to Webster's New World Dictionary, Heuristics is the practice of using rules of thumb to find solutions or answers. It is a fancy word used to describe a field of study more commonly referred to as "Problem Solving." The study of heuristics is not about a specific problem, but rather the process of solving all problems. *How to Solve It* by George Polya is one of the most well known books in this field. He has a four-part strategy for solving a variety of problems.

I. <u>Understand the Problem</u>: What are you looking for? What information do you have? Is the information on hand sufficient for you to determine your answer? Write all of this information down.
II. <u>Devise a Plan</u>: Find the connection between the given data (information) and the solution. Can you think of a similar problem? Did you take into account all of the available information?
III. <u>Carry out the Plan</u>: Check each step. Can you prove that each part of your plan is correct?
IV. <u>Looking Back</u>: Examine your solution. Are you able to confirm it? Does it make sense?

Of course, if you are like most of us, you can get a little stumped when it comes to "devising a plan." The first part of any plan should, of course, be prayer. No matter the problem or solution, God is always the right place to start. After you pray, here are some ideas to help you finish your plan:

- Guess-and-check
- Draw a picture, Act it out
- Make a model

- Look for a pattern
- Make a table or chart
- Work backwards

- Logical reasoning
- Try a simpler problem
- Write an equation

"With man this is impossible, but with God all things are possible." Matthew 19:26

Next month: "Manipulatives: Tactile Learning on a Budget." Please e-mail us (Peter and Bethany Barnosky) with questions, comments, or topics for future columns: brb@webthunder.com. Thanks to *How to Solve It* by George Polya, *Webster's New World Dictionary*, Third College Edition, and *Elementary School Mathematics, 2nd ed.* by John A. Van De Walle. [November 2001]