A 5 Stage Model for Problem Solving

To help students develop successful problem solving strategies, here are the stages "A" students go through to correctly solve problems. The 5 stages in problem solving (TIPS-C) are very useful in diagnosing problem-solving difficulties and what assistance (if any) is needed.

Stage 1: Translation

This is the 1st stage in understanding a problem. This entails:
  a. Understanding what is given (givens) in the problem.
  b. Understanding what is to be found (get to's).
  c. Understanding the vocabulary in the problem.

A problem is understood when students can restate the "givens" and "get to's" in their **own words and understand the vocabulary**.

Stage 2: Integration

There are 3 separate processes in this stage:
  a. Identify the type of problem it is (name the type).
  b. Decide what prerequisite information is needed to solve the problem and reach a correct solution (formulas, equations, math knowledge, etc.).
  c. Draw a visual representation of the problem in the form of a flow chart, factor labeling, diagram, or table.

Stage 3: Plan & Monitor a Solution

As a solution is developed step-by-step, check to see if each step is reasonable and in the units asked for. Without the correct units, an answer will not be logical.

Stage 4: Solve the Problem

In this stage, the learner does the necessary mathematical calculations to reach a correct answer. A calculator may be needed here.

Stage 5: Check the Answer

It is important to check the answer as feedback on whether the solution was done properly. If the answer was not correct, each step in the solution must be rechecked and retried until the correct answer has been achieved. Students may need to consult lecture notes, textbooks, workbooks, solutions manuals, etc. for guidance.

To help remember each stage in this 5-stage model, notice that the 1st letter of each stage in order can be combined to spell the word mnemonic "TIPS-C." Mnemonics are aids that help students remember steps in problem solving.