**Introduction to Problem Solving**

**Quiz Key**

1. What is the definition of problem solving?

Problem solving is a mental process and is part of the larger problem process that includes problem finding and problem solving. Considered the most complex of all intellectual functions, problem solving has been defined as higher-order cognitive process that requires the modulation and control of more routine or fundamental skills.

1. Problem solving occurs when an organism or an artificial intelligence system needs to move from a given state to a desired goal state.
   1. move from a given state
   2. move to a desired goal state
   3. move from a given state to a desired goal state.
2. List four steps to the Problem Solving Process and briefly describe each step in your own words.
   1. Understanding the Problem

\*State the problem in your own words.

\*What are you trying to find or do?

\*What are the unknowns?

\*What information do you obtain from the problem?

\*What information, if any, is missing or not needed?

B. Devising a Plan

* + Look for a pattern.
  + Examine related problems and determine if the same technique can be applied.
  + Examine a simpler or special case of the problem to gain insight into the solution of the original problem.
  + Make a table.
  + Make a diagram.
  + Write an equation.
  + Use guess and check.
  + Work backwards.
  + Identify a sub goal.

1. Carrying out the Plan
   * Implement the strategy or strategies in step 2, and perform any necessary actions or computations.
   * Check each step of the plan as you proceed. This may be intuitive checking or a formal proof of each step.
   * Keep an accurate record of your work.
2. Looking Back
   * Check the results in the original problem.
   * Interpret the solution in terms of the original problem. Does your answer make sense? Is it reasonable?
   * Determine whether there is another method of finding the solution.
   * If possible, determine other related or more general problems for which the techniques will work.