Problem Solving Techniques

1. The Heuristic Approach

A heuristic approach means using trial and error methods when the known algorithms just won’t cut it. In this situation, you have to determine what type of strategy you want to use.

a. Guess & Check
   i. Guess what the answer should be
   ii. Then check to see if you were right
b. Patterns
   i. List out your data or information
   ii. Look for a pattern
   iii. Use that pattern to solve the question
c. Lateral Thinking
   i. Ask as many relevant questions as possible
   ii. Use the answers to find a possible solution to the problem
d. Deductive Thinking
   i. Use the given information to come up with more facts about the situation
   ii. Use logic and all the relevant facts
   iii. Draw conclusions and eliminate possibilities to find the correct answer
e. The Modeling Approach
   i. Think of a new situation which is similar to the original question
   ii. Solve the new situation
   iii. Relate your answer back to the original question and solve
f. Set Concept
   i. Identify the key facts
   ii. Compare these facts by using a Venn diagram
   iii. Solve the question by using the Venn diagram you drew (and any equations that can now be applied to the problem)

2. The Model Approach

A model approach means using diagrams, charts, and pictures to illustrate and simplify the question that you’re given. Often one does not need to draw the pictures to solve the question; however, using this method simplifies the question by transforming a verbal story problem into pictures and math symbols, which is easier to solve.

a. Read and try to understand the question
b. Draw a diagram which represents the situation in the question
c. Label all known parts of the diagram
d. Use facts, rules, equations of math you know (or have to look up) to solve for the unknown parts of the diagram
e. Use the diagram to solve the question