

When a guess does not produce a correct answer, the student should ask such questions as, “What would be a reasonable next guess?”, “Should my next guess be higher or lower?” The object is to keep making guesses successively closer to satisfying the conditions of the problem until a guess produces the correct answer.

### *Solve Part Of The Problem*

Frequently it is possible to separate a problem into several component parts or steps. In such cases a student makes progress toward the solution by solving the problem one part, or step, at a time. The solution to one part of a problem might produce a method which can be used to solve other parts of the problem. Sometimes the student should pause and ask, “What question can I answer next that might assist in this solution?”

### *Search For A Pattern*

Searching for a pattern may be used in conjunction with one or more other strategies such as make a chart, make a list, trial and error, or solve part of the problem. Searching for a pattern involves analyzing the information for regularities or patterns. It may be necessary to generate information and organize it, for example, in a list or a chart.

Any observed pattern which seems potentially useful should be tested. The test might involve predicting the next part of the pattern and then checking whether it satisfies the conditions. It could involve producing a logical reason for why the pattern works. After a pattern has been tested, it might be used efficiently to predict answers that could be difficult to produce by other methods

### *Solve A Simpler Problem*

The intention is to find a simplification which makes the problem easier to solve but makes no drastic change in the basic structure of the problem. Then apply or adapt the solution of the simpler problem to the solution of the original problem. Several suggestions for simplifying problems are: replace large numbers with smaller numbers, replace a complicated diagram with a simpler one, replace a variable with a specific numerical value, etc.

### *Work Backwards*

When employing the work backwards method, the student focuses not on the information or the conditions of the problem but on what must be found, or the answer. The student might ask, “What do I need to know in order to find the answer?”, or “If I knew the answer to the problem, what else would I know about the solution?” The object of the work backwards method is to answer such a question by citing given information or a conclusion deduced from what is stated in the problem. Usually, it is necessary to work backwards for several steps before completing a solution.