Problem Solving Pathway

General Description:
A self-learning guide, teaching the art of problem solving.
The initial four books use puzzles and games to teach fundamental skills and concepts.
The remaining three books apply the tools and skills learned, to real world situations.

Intended Audience:
Anyone needing analysis, problem solving, decision making, skills.
College-level students, NEET's (Not in Education, Employment, Training), employed.

The problem solving angle:
Each puzzle/game (in the initial books) is considered a problem to be solved.
Problem solving phases – identification of the problem, ignoring redundant and irrelevant information, analysis, getting wrong or sub-optimal solutions, zeroing in on the optimal solution (deciding), reviewing (feedback), process improvement.

Most puzzles can be solved in only one way.
There are many strategies for winning games. If winning is impractical, sue for a draw.
Real world problems usually have several strategies and several ways of solving them.
To find the optimal solution, you must first find all possible solutions.
A good solution demands you spend time analyzing the problem.

The solution finally implemented will depend not only on its feasibility (suitability for purpose), but also on the convenience it provides to all its stakeholders (decision makers, implementers, people who are going to use it daily).

Details:
All problems, whether puzzles and games or real world problems, must first be analyzed.
Unless you know and understand what you seek, how will you know when you have it?
Find viable solution paths, abandon impossible solution paths.
Find which viable solution paths give solutions you can *live with*.
Implement each solution; find which is the optimal one (under current circumstances).
Seek feedback to improve the current solution, or to seek a better solution.

Technical details:
The books are typeset and illustrated in software called LaTeX.
Output is a PDF file.
256 pages (page size 6" x 9") per book, inclusive of Title, Copyright, Contents...
Type of publication: Independent
With enough demand, a printed book (PoD or offset) would be considered.
Cost of the book = cost of printing + cost of courier to you .

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Contents of the first four Books (puzzles and games):

1. Teaching must start simple, to ease the path to (complex) real world problem solving
   - Puzzles children solve: Illusions, find hidden objects, identify what is different in a picture, jigsaw puzzles
   - Slightly more advanced puzzles: Crossword, Word search
   - Defining the tools and nomenclature used throughout the book series
2. Finding patterns and making connections
   - Find missing numbers and pictures
   - Identifying what is not part of the pattern

Basic mathematics
   - Finding single unknowns, multiple unknowns and simultaneous equations
   - Geometry and pictures
   - Tricky problems
3. Shapes
   - Identifying basic shapes
   - Counting simple and composite shapes
   - Positioning and combining shapes, tanagrams
4. Matchstick puzzles
   - Manipulating matches (adding, removing, moving)
   - Changing size and type of (simple or composite) shapes – squares and triangles
   - Digital number and Roman numeral problems
5. Coin puzzles
   - Moving coins in cells or in a grid, using constraints
6. Games
   - Sudoku, Solitaire, Minesweeper, Rubik's cube, chess, draughts
   - Plotting a winning strategy, or a draw when a win is unlikely or impossible
7. Thinking
   - Logical, lateral, creative, thinking
8. Weighing and measuring problems