

Sudoku Strategy Quick-Reference Card

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Beginner Strategies

Scanning (Cross-Hatching)

When to use: First pass on any puzzle. **How it works:** Pick a number. Check which rows and columns already contain it. For each 3×3 box missing that number, the intersecting constraints often leave only one possible cell. **Difficulty level:** Easy

Naked Singles

When to use: When a cell has been narrowed to one candidate. **How it works:** If pencil marks show only one possible number for a cell, that number goes there. No other option exists. **Difficulty level:** Easy

Hidden Singles

When to use: After pencil-marking a row, column, or box. **How it works:** If a number appears as a candidate in only one cell within a unit — even though that cell has other candidates too — that number must go there. **Difficulty level:** Easy

Intermediate Strategies

Naked Pairs

When to use: When two cells in the same unit share the exact same two candidates. **How it works:** Those two numbers are locked into those two cells. Remove them as candidates from all other cells in that unit. **Difficulty level:** Medium

Naked Triples

When to use: When three cells in a unit share a combined set of three candidates. **How it works:** The three numbers are distributed among those three cells. Eliminate them from all other cells in the unit. (Not every cell needs all three candidates.) **Difficulty level:** Medium

Hidden Pairs

When to use: When two candidates appear in only two cells within a unit. **How it works:** Those two numbers must go in those two cells. Remove all other candidates from those cells. **Difficulty level:** Medium

Pointing Pairs (Box-Line Reduction)

When to use: When a candidate within a box is limited to a single row or column. **How it works:** If a number can only go in one row (or column) within a box, eliminate that number from the rest of that row (or column) outside the box. **Difficulty level:** Medium

Advanced Strategies

X-Wing

When to use: When a candidate appears in exactly two cells in each of two different rows, and those cells share the same two columns. **How it works:** The candidate must occupy one of the two diagonal pairs. Eliminate it from all other cells in those two columns. **Difficulty level:** Hard

Swordfish

When to use: Extension of X-Wing across three rows and three columns. **How it works:** If a candidate is confined to at most three columns across three rows (forming a "fish" pattern), eliminate it from those columns in all other rows. **Difficulty level:** Hard

XY-Wing

When to use: When three cells form a pivot-wing pattern with two candidates each. **How it works:** Identify a pivot cell (AB) connected to two wing cells (AC and BC). Any cell that sees both wings cannot contain C. **Difficulty level:** Hard

Coloring (Simple)

When to use: When a candidate forms chains of conjugate pairs. **How it works:** Assign two "colors" to alternating candidates in a chain. If two same-colored candidates share a unit, that color is false — eliminate those candidates. **Difficulty level:** Expert

Strategy Decision Tree

Start
|
├─ Scan for naked singles → found? → place number
|

- └ Scan for hidden singles → found? → place number
- └ Look for naked pairs/triples → found? → eliminate candidates
- └ Look for pointing pairs → found? → eliminate candidates
- └ Look for X-Wing patterns → found? → eliminate candidates
- └ Try advanced techniques (Swordfish, XY-Wing, Coloring)

Golden rule: Always re-scan for singles after each elimination. One elimination often unlocks several easy placements.

Pencil-Mark Notation

Write small candidate numbers in the corner or center of each cell: - **Corner notation:** Candidates that could go in this cell - **Center notation:** Numbers you're fairly certain about (often used for naked pairs)

Keep your marks clean. Erase eliminated candidates immediately.

Quick Reference Table

Strategy	Finds	Difficulty
Scanning	Placements	Easy
Naked Singles	Placements	Easy
Hidden Singles	Placements	Easy
Naked Pairs	Eliminations	Medium
Naked Triples	Eliminations	Medium
Hidden Pairs	Eliminations	Medium
Pointing Pairs	Eliminations	Medium
X-Wing	Eliminations	Hard
Swordfish	Eliminations	Hard
XY-Wing	Eliminations	Hard
Coloring	Eliminations	Expert

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