

Repairing numeracy skills after brain damage (a condition known as **acquired dyscalculia** or **acalculia**) is a process of retraining the brain to process quantities, symbols, and logic.¹ Because the brain is "plastic" (**neuroplasticity**), it can often form new neural pathways to bypass damaged areas.²

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The most effective approach combines **restorative therapy** (rebuilding the skill) and **compensatory strategies** (using tools to work around the difficulty).

1. Professional Assessment

The first step is a **neuropsychological evaluation**. This helps determine if the issue is with:

- **Number Sense:** Difficulty understanding the "size" of numbers (e.g., is 10 bigger than 2?).³
 - **Procedural Memory:** Forgetting the steps to solve a problem (e.g., long division).
 - **Visual-Spatial Processing:** Struggling to line up columns in an addition problem.
 - **Symbolic Recognition:** Forgetting what signs like $+\$$ or $\$ \backslash \text{div} \$$ mean.
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2. Restorative Techniques (Rebuilding the Brain)

These methods focus on repetitive, "bottom-up" learning to stimulate new connections.⁴

Multi-Sensory Learning

Don't just look at numbers; use your other senses.

- **Manipulatives:** Use physical objects like coins, blocks, or "Cuisenaire rods" to visualize addition and subtraction.⁵ Moving a physical object helps the brain bridge the gap between abstract symbols and concrete reality.⁶
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- **Number Lines:** Use a visual number line to "see" the distance between numbers. This reinforces the concept of magnitude.

Repetitive "Drill" Apps

Gamified learning can reduce "math anxiety," which is common after brain injury.

- **Serious Games:** Research in 2026 shows that "serious games" (apps designed for

cognitive rehab) are more effective than paper worksheets because they provide instant feedback.

- **Gradual Complexity:** Start with "subitizing" exercises—looking at a small group of dots and naming the quantity without counting them individually.⁷
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3. Compensatory Strategies (Living with the Difficulty)

If certain functions don't fully return, you can use "hacks" to maintain independence.

- **Assistive Tech:** Use specialized calculators that speak numbers aloud to prevent "transposition errors" (flipping 42 to 24).
 - **Chunking:** Break large numbers down. Instead of "four thousand five hundred," think "45... hundred."
 - **Color-Coding:** Use different colored pens for different parts of a math problem (e.g., red for "carry-over" numbers, blue for the main digits) to help with visual tracking.
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4. Daily Cognitive Exercises

You can integrate "math therapy" into your daily routine:

- **Counting Money:** Practice making change with physical coins.⁸ This combines fine motor skills with numerical logic.
 - **Logic Puzzles:** Games like **Sudoku** or **The Tower of Hanoi** help rebuild the logic and sequencing parts of the brain without requiring complex arithmetic.⁹
 - **Kitchen Math:** Using measuring cups and doubling/halving recipes is a high-value real-world exercise.¹⁰
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Note: Recovery often follows a "plateau" pattern. You may see rapid progress, then stay the same for weeks before another jump. This is normal. Fatigue makes math much harder, so practice in short 15-20 minute bursts.