

The Trachtenberg system – mental arithmetic without the times tables

Upcoming episode

A method for mental arithmetic in which the times tables are replaced by one short rule per digit. The whole Trachtenberg system walked through, with the rule and an example for every digit from 2 to 12 – and how to check the answer.

MAIN TOPICS

- The Trachtenberg system as a whole
- Every digit rule from 2 to 12, with examples
- The neighbour and halving – the basic ideas in the system
- The rules that add, and the ones that subtract
- The general method for large numbers
- Addition, division, squaring and square roots
- Digit sums – checking the answer without redoing the work
- Why the rules work
- Jakow Trachtenberg and the background to the system

QUESTIONS THIS EPISODE ANSWERS

- What is the Trachtenberg system, and what does it cover?
- What is meant by "the neighbour", and what does halving mean in the system?
- How does the rule go for each digit from 2 to 12?
- Why do the rules for 8 and 9 subtract, while most of the others add?
- Why are the rules for 3, 4, 8 and 9 different at the ends of the number?
- How does the system handle large numbers, where no single rule fits?
- Can you really calculate without knowing the times tables?
- How do you check that the answer is right?
- Who was Jakow Trachtenberg, and where did the system come from?

KEY POINTS

- The system is one short rule per digit, not one trick – it covers 2 to 12.
- Two ideas carry the whole thing: the neighbour to the right, and halving rounded down.
- Some rules add, while 3, 4, 8 and 9 are built on subtracting.
- The general method handles large numbers, where no single rule reaches.
- The system also covers addition, division, squaring and square roots.
- The digit-sum check catches most errors, but not all – it is a test, not a proof.
- The rules are not magic – they fall out of how the decimal system is built.

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