

ADVANCED MENTAL CALCULATION

BECOME AS FAST AS A CHAMPION

For anyone who already has a solid foundation in mental calculation and wishes to reach an expert level

Master the techniques used by mental calculation champions to perform complex operations in seconds

Duration : 3 hours	Modules : 3 modules
Lessons : 12 lessons	Audience : Adults with solid mental calculation foundations
Format : 100% online, asynchronous	Provider : N° 11757351875
Certification : Qualiopi	Price : On request

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Course description

This 3-hour training is designed for those who want to elevate their mental calculation skills to championship level. You will learn the advanced techniques used by professional mnemonists and mental calculation champions to perform complex operations in just seconds. The program covers proven methods such as the Trachtenberg method, complement systems, and advanced visualization. From multiplications of three digits to mental calendars and square roots, you'll build an expert toolkit. By the end, you'll master techniques applicable in professional, educational, competitive settings, or simply for intellectual enjoyment.

Module summary

MODULE 1	The foundations of expert mental calculation	4 lessons
MODULE 2	Advanced Multiplication and Division Techniques	4 lessons
MODULE 3	The impressive calculations and advanced applications	4 lessons

Learning objectives

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- Develop the mindset and working memory required for expert-level mental calculation
- Master the Trachtenberg method and Vedic multiplication techniques for rapid calculations
- Perform complex divisions, powers, and square roots mentally without paper
- Calculate the day of any date using the mental calendar method
- Apply numerical mnemonics to store intermediate results during complex calculations
- Build a daily training routine to maintain and enhance calculation expertise

General information

Duration	3 hours
Target audience	Adults with solid mental calculation foundations seeking expert-level mastery
Prerequisites	None - training accessible to all adults
Price	Sur devis - TVA non applicable (article 261-4-4° du CGI)
Certification	Qualiopi - Attestation de fin de formation
Training provider	DYNSEO - N° de déclaration d'activité : 11757351875

Lesson 1 - The mindset of the quick calculator

- Develop deep concentration, flexibility, and confidence in calculation methods
- Mental calculation as a brain sport: parallels with memorization and chess
- Champions and their records: Arthur Benjamin, Alexis Lemaire, Scott Flansburg
- Rapid calculation vs exact calculation: choosing methods by context

Lesson 2 - Strengthening mathematical working memory

- Working memory as the bottleneck of complex mental calculation
- Chunking techniques to reduce memory overload
- Training to retain increasingly long numerical sequences
- Using the mental palace to store intermediate calculation results

Lesson 3 - The system of supplements and references

- Complements to 10, 100, 1000 as universal accelerators
- Reference numbers: multiples of 10, 25, 50, 100 as anchor points
- Subtraction by complement: $1000-347$ in under two seconds
- Multiplying numbers near 100: 97×94 in three seconds with cross method

Lesson 4 - Developing numerical intuition

- Recognizing 'friendly' numbers that combine well to simplify calculations
- Fermi estimation: giving order of magnitude to any numerical question
- Advanced divisibility rules: by 7, 11, 13, 17, 19
- Memorizing squares, cubes, and powers as calculation shortcuts

Lesson 1 - The Trachtenberg method — multiplying by anything

- Jakow Trachtenberg's story: a system created in a concentration camp
- Ultra-fast specific rules for multiplication by 11, 12, 13
- General Trachtenberg method for multiplying by any number
- Progressive exercises: from one-digit to three-digit multiplications

Lesson 2 - Cross Multiplication — Vedic Method

- Origins of Vedic mathematics and their modern rediscovery
- The sutra 'vertically and crosswise': multiply two-digit numbers in seconds
- Extension to three-digit numbers for impressive demonstrations
- Ultra-fast special cases: numbers near powers of 10, numbers ending in 5

Lesson 3 - Complex divisions without performing the operation

- Division by single-digit numbers: regain and surpass primary school speed
- Division by two-digit numbers: estimation method with adjustment
- Exact vs approximate divisions: knowing when to stop
- Quick fraction to decimal conversion: $1/7$, $1/11$, $1/13$ repeating patterns

Lesson 4 - Mental powers and square roots

- Squaring two-digit numbers using the method of differences
- Cubing techniques for numbers less than 20
- Extracting perfect square roots from large numbers
- Extracting cube roots: the one-second guessing method

Lesson 1 - The mental calendar — finding the day of any date

- John Conway's Doomsday method: general principle and codes to memorize
- Annual and monthly codes: durable memorization through associations
- Progressive training: 20th century, 21st century, then earlier dates

- Remarkable dates for demonstrations: historical events, famous anniversaries

Lesson 2 - Large numbers and impressive mental calculations

- Multiplying two three-digit numbers without paper: step-by-step method
- Four-digit multiplications: decomposition methods and cross-checking
- Proof by 9 and 11: quickly verifying complex calculations
- Very large number calculations: factorials, high powers, approximations

Lesson 3 - Memorizing Numbers — Techniques for Numerical Mnemonics

- Major phonetic system: associate numbers and consonants to create words
- PAO (Person-Action-Object): memorize dozens of numbers in minutes
- Application to calculation: store intermediate results without cognitive overload
- Memorizing Pi, phone numbers, constants — useful practice

Lesson 4 - Assessment and expertise journey

- Final timed challenge: 30 varied calculations within a limited time
- Self-assessment: mastered techniques vs those requiring more practice
- Building daily expert training routine: 20 minutes a day for 3 months
- Mental calculation competitions and communities: World Cup, Memoriad, online resources

Teaching methods

- Online training accessible 24/7 on DYNSEO's learning platform
- Self-paced progression through modules and lessons
- Progressive exercises with increasing difficulty levels
- Timed challenges and practical application demonstrations
- Certificate of completion issued at the end of training
- Access to supplementary resources and calculation practice tools