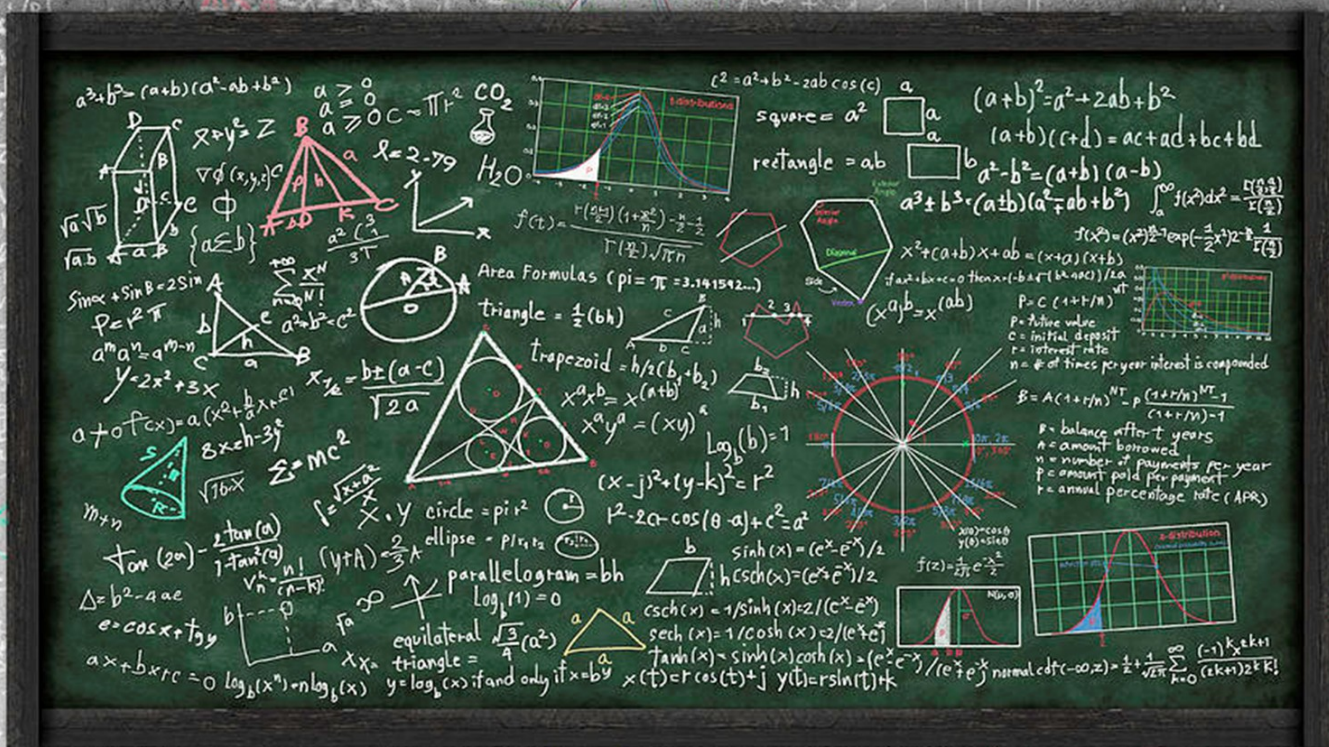


Number Sense Workbook And Video Series



Anthony Gillespey

MathNinja.Org
1st Edition

About the book

Have you ever met someone or watch a video of a person that looks like they can do impossibly hard math in their head? In some instances they are actually that bright but many times it is because they have learned mental math tricks that make certain math problems much easier to calculate mentally. This book is many of those tricks. The key concept to remember while using this book is that the calculations should be done mentally. No scratch work should be shown.

This book was originally written to teach my own math team the basics tricks that we would use on TMSCA (Texas Math Science Coaches Association) Number Sense Test. These tricks can be found lots of places on the internet, but I feel what sets this book apart from others is that each lesson is linked to a video on [YouTube.com](https://www.youtube.com). I would recommend you watch each video then try the sample problems yourself. Open the back of the book and check your answers. If you are still making mistakes watch the video again or leave a comment along with your question on my website.

All videos can be found on my website <http://mathninja.org> , the direct link to the videos is http://mathninja.org/?page_id=190. Also bookmark my [You Tube Channel](#) . Feel free to make comments on my website about errors you find. Who knows maybe the next time I wrote something I deem worthy of sharing with others I will send you a free copy. Feel free to email me also at MathNinjaVideos@gmail.com

About the Author

I have taught 20 years in the Junior High level first in El Paso, Texas and later in Corpus Christi, Texas. Throughout my career I have taught everything from 7th grade math through Pre-AP Geometry. Currently I teach Pre-AP Geometry, GT Algebra, and my favorite class ever Math Academy. As I said I wrote this book for my own math team. We are currently the 4A State TMSCA Champion overall in Number Sense, Calculator Application and General Math.

All of my resources have been used in my own class on a daily basis so I'm not sending you something that I haven't used myself.

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Multiplying by 25

When:

Multiplying a number by 25.

How:

- 1) Divide the non-25 number by 4.
- 2) Add two zeroes.

Ex1) $25 \cdot 64$ 1) $64 \div 4 = 16$ 2) Answer = 1600	Ex2) $25 \cdot 24$ 1) $24 \div 4 = 6$ 2) Answer = 600
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1) $25 \times 8 = \underline{\quad}$

2) $25 \times 16 = \underline{\quad}$

3) $25 \times 24 = \underline{\quad}$

4) $25 \times 40 = \underline{\quad}$

5) $25 \times 44 = \underline{\quad}$

6) $25 \times 48 = \underline{\quad}$

7) $25 \times 56 = \underline{\quad}$

8) $25 \times 60 = \underline{\quad}$

9) $25 \times 64 = \underline{\quad}$

10) $25 \times 72 = \underline{\quad}$

11) $25 \times 76 = \underline{\quad}$

12) $25 \times 80 = \underline{\quad}$

13) $25 \times 88 = \underline{\quad}$

14) $25 \times 224 = \underline{\quad}$

15) $25 \times 428 = \underline{\quad}$

16) $25 \times 364 = \underline{\quad}$

17) $25 \times 2.04 = \underline{\quad}$

18) $25 \times 0.56 = \underline{\quad}$

19) $25 \times 2.52 = \underline{\quad}$

20) $25 \times 6.04 = \underline{\quad}$

21) $25 \times 5.88 = \underline{\quad}$

22) $25 \times 0.72 = \underline{\quad}$

23) $25 \times 800 = \underline{\quad}$

24) $25 \times 2.56 = \underline{\quad}$

Multiplying by 11

When:

Multiplying a number by 11.

How: Work right to left

- 1) The last digit is the units digit
- 2) The next digit is the sum of the tens and the units digits
- 3) The next digit is the sum of the tens and the hundreds digit + carry
- 4) The first digit is the hundreds digit + any carry

Note: you can use the two finger method. Start on the right side of the number and add your two fingers, moving right to left across the number.

Ex1) $11 \cdot 132$ 1) Write the 2 2) $2 + 3 = 5$ write 5 3) $3 + 1 = 4$ write 4 4) 1 write 1 5) Answer = 1452	Ex2) $11 \cdot 284$ 1) Write the 4 2) $4 + 8 = 12$ write 2 carry 1 3) $8 + 2 + 1(\text{carry}) = 11$ write 1 carry 1 4) $2 + 1(\text{carry}) = 3$ write 3 5) Answer = 3124
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- | | |
|------------------------------------------|-------------------------------------------|
| 1) $11 \times 232 = \underline{\quad}$ | 13) $11 \times 147 = \underline{\quad}$ |
| 2) $11 \times 425 = \underline{\quad}$ | 14) $11 \times 284 = \underline{\quad}$ |
| 3) $11 \times 357 = \underline{\quad}$ | 15) $11 \times 234 = \underline{\quad}$ |
| 4) $11 \times 191 = \underline{\quad}$ | 16) $11 \times 945 = \underline{\quad}$ |
| 5) $11 \times 375 = \underline{\quad}$ | 17) $11 \times 564 = \underline{\quad}$ |
| 6) $11 \times 282 = \underline{\quad}$ | 18) $11 \times 2244 = \underline{\quad}$ |
| 7) $11 \times 922 = \underline{\quad}$ | 19) $11 \times 3154 = \underline{\quad}$ |
| 8) $11 \times 122 = \underline{\quad}$ | 20) $11 \times 1214 = \underline{\quad}$ |
| 9) $11 \times 154 = \underline{\quad}$ | 21) $11 \times 3254 = \underline{\quad}$ |
| 10) $11 \times 175 = \underline{\quad}$ | 22) $11 \times 32.7 = \underline{\quad}$ |
| 11) $11 \times 182 = \underline{\quad}$ | 23) $11 \times 1.23 = \underline{\quad}$ |
| 12) $11 \times 888 = \underline{\quad}$ | 24) $11 \times 8.88 = \underline{\quad}$ |

Multiplying two number both over 100

When:

Multiplying two numbers that are both more than 100, but close to 100.

How:

- 1) Determine how much each number is over 100
- 2) Multiply those numbers, this is the last 2 digits of the answer (include a leading zero if needed.)
- 3) Pick the larger number and add how much over 100 the other number is. This is your first 3 digits.

* Note: this trick works the same with two numbers over 1000, just write 3 digits.

Ex1) $104 \cdot 112$	Ex2) $1004 \cdot 1002$
1) 104 is 4 more than 100 and 112 is 12 more than 100	1) 104 is 4 more than 1000 and 102 is 2 more than 1000
2) $4 \cdot 12 = 48$ last 2 digits are 48	2) $4 \cdot 2 = 8$ last 3 digits are 008
3) $112 + 4 = 116$ the first 3 digits is 116	3) $1004 + 2 = 1006$ the first 3 digits is 1006
4) The Answer is 11648	4) The Answer is 1006008

- | | |
|----------------------------|--------------------------------|
| 1) 1 0 8 x 1 0 3 = _____ | 16) 1 0 0 8 x 1 0 1 0 = _____ |
| 2) 1 0 4 x 1 0 8 = _____ | 17) 1 0 0 3 x 1 0 1 1 = _____ |
| 3) 1 0 4 x 1 0 3 = _____ | 18) 1 0 0 4 x 1 0 2 2 = _____ |
| 4) 1 0 5 x 1 0 4 = _____ | 19) 1 0 0 5 x 1 0 1 2 = _____ |
| 5) 1 0 7 x 1 1 1 = _____ | 20) 1 0 0 7 x 1 0 0 5 = _____ |
| 6) 1 0 2 x 1 0 7 = _____ | 21) 1 0 0 2 x 1 0 0 3 = _____ |
| 7) 1 0 3 x 1 2 2 = _____ | 22) 1 0 0 3 x 1 0 0 1 = _____ |
| 8) 1 0 3 x 1 1 3 = _____ | 23) 1 0 0 6 x 1 0 0 7 = _____ |
| 9) 1 0 4 x 1 0 6 = _____ | 24) 1 0 0 4 x 1 0 1 5 = _____ |
| 10) 1 0 5 x 1 1 4 = _____ | 25) 1 0 1 5 x 1 0 0 3 = _____ |
| 11) 1 0 7 x 1 0 5 = _____ | 26) 1 0 0 7 x 1 0 0 5 = _____ |
| 12) 1 0 9 x 1 1 2 = _____ | 27) 1 0 0 9 x 1 0 0 3 = _____ |
| 13) 1 0 1 x 1 0 7 = _____ | 28) 1 0 1 1 x 1 0 0 5 = _____ |
| 14) 1 0 5 x 1 0 5 = _____ | 29) 1 0 2 4 x 1 0 0 3 = _____ |
| 15) 1 0 2 x 1 1 2 = _____ | 30) 1 0 1 2 x 1 0 0 8 = _____ |

Adding consecutive Integers

When:

Adding consecutive integers, even, or odd

How:

Consecutive Integers

- 1) The last number times the next number divided by two.(make sure to divide the even number by 2

Consecutive Even

- 1) Half the last number
- 2) Half the next number
- 3) Multiply the answers

Consecutive Odd

- 1) Make it even by adding 1 to the number
- 2) Divide the number by 2
- 3) Square the answer

Note: To find Triangular numbers use the Consecutive Integer trick.

Ex1) Consecutive Integers $1 + 2 + 3 \dots + 20 =$ 1) The last number is 20 the next number is 21. 2) 20 is even, half of 20 is 10. 3) $10 \times 21 = 210$ 4) The answer is 210	Ex2) Consecutive Even $2 + 4 + 6 \dots + 20 =$ 1) The last number is 20. $20 \div 2 = 10$ 2) The next number is 22. $22 \div 2 = 11$ 3) $10 \times 11 = 110$ 4) The answer is 110	Ex3) Consecutive Odd $1 + 3 + 5 \dots + 19 =$ 1) 19 is the last number. $19 + 1 = 20$ 2) $20 \div 2 = 10$ 3) $10^2 = 100$ 4) The answer is 100
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1) $1 + 2 + 3 \dots + 10 = \underline{\hspace{2cm}}$

2) $2 + 4 + 6 \dots + 10 = \underline{\hspace{2cm}}$

3) $1 + 3 + 5 \dots + 11 = \underline{\hspace{2cm}}$

4) $1 + 2 + 3 \dots + 29 = \underline{\hspace{2cm}}$

5) $2 + 4 + 6 \dots + 30 = \underline{\hspace{2cm}}$

6) $1 + 3 + 5 \dots + 15 = \underline{\hspace{2cm}}$

7) $1 + 2 + 3 \dots + 24 = \underline{\hspace{2cm}}$

8) $2 + 4 + 6 \dots + 24 = \underline{\hspace{2cm}}$

9) $1 + 3 + 5 \dots + 31 = \underline{\hspace{2cm}}$

10) $1 + 2 + 3 \dots + 40 = \underline{\hspace{2cm}}$

11) $2 + 4 + 6 \dots + 12 = \underline{\hspace{2cm}}$

12) $1 + 3 + 5 \dots + 13 = \underline{\hspace{2cm}}$

13) 5th Triangular number is _____.

14) 10th Triangular number is _____.

15) 15th Triangular number is _____.

16) 19th Triangular number is _____.

17) 20th Triangular number is _____.

18) 8th Triangular number is _____.

19) 100th Triangular number is _____.

20) 24th Triangular number is _____.