

Math Tricks



3

Vedic Math Tricks

Singapore Math Tricks

Middle School Mathematics Book

Competent Skills

Mental Math Tricks

Contains

- * Multiplying by 37, 143, 3367, Divisibility Rules for 8, 12, 13, 15, Multiply of Fractions in different forms, Division of Fractions GCF, LCM, Ratio
- * Practice on individual topics
- * Model test papers

Benefits:

Helps kids to solve mathematical problems many times **FASTER**
Helps in making **INTELLIGENT** decisions to all problems
It **REDUCES** the burden of memorizing difficult concepts
It **INCREASES** the concentration of a child

Ice Venkatesh

TMSCA Medalist and Author

EXCLUSIVE

**AI Chat Bot
Enabled
Book**

Middle School Mathematics: Competent Skills (Book 3)

Mathematics concepts that strengthen mathematical foundation
for TMSCA, AMC, MATHCOUNTS and Math Olympiad

By: Ice Venkatesh
Author and Founder of Vibba LLC

MIDDLE SCHOOL MATHEMATICS: COMPETENT SKILLS (Book 3)

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Editor: Arti Venkatesh

MIDDLE SCHOOL MATHEMATICS: COMPETENT SKILLS (Book 3)

I am dedicating my third Mathematics book to the Director of The Village High School



Mr. Carl Newman



THE VILLAGE SCHOOL
A NORD ANGLIA EDUCATION SCHOOL
Houston TX USA

Acknowledgments

This book would not have been possible without the unwavering support of The Village School, whose belief in my vision has fueled my journey. Their encouragement has empowered me to share my passion for mathematics with young learners everywhere.

I am deeply grateful to my parents, Arti/Murali Venkatesh, for always inspiring me to pursue my dreams with determination and joy and encouraged me to explore my creativity.

A heartfelt thank you to the incredible mentors and educators who have guided me, sparking my love for mathematics and problem-solving. Your support has shaped my journey, and I am forever thankful.

To my friends at The Village School—you are my constant source of inspiration. Your curiosity, perseverance, and camaraderie remind me every day that together, we can transform the way the world sees math!

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Foreword by Andrea Sealy

Entrepreneurship Teacher, The Village High School and Founder, Agentia

It is both a joy and an honor to write this foreword for a student as exceptional as Ice Venkatesh. As an Entrepreneur Diploma Instructor at The Village High School, I've had the privilege of coaching many bright and driven young people, but Ice stands out as a truly remarkable blend of intellect, creativity, and purpose.

I worked with Ice during her freshman year, coaching her on one of her FBLA (Future Business Leaders of America) challenges. Her determination, innovative thinking, and ability to connect ideas across disciplines were unmistakable. She has a rare gift: not just for excelling in her own learning, but for reimagining how learning can happen for others.

Ice's passion for mathematics is deep and genuine, yet what makes her work extraordinary is her vision for making math accessible, engaging, and culturally responsive. She draws on her own diverse background and personal learning journey, one that embraced approaches rarely found in traditional American classrooms. From this, she has created a way of teaching math that is both joyful and effective, empowering students to see the subject through fresh eyes.

This book, the third in her 5-book Elementary Mathematics Book Series, is the latest milestone in that mission. Each volume has been built thoughtfully upon the last, weaving together mental math strategies, Vedic math techniques, and visually rich examples that invite young learners to think critically, play with numbers, and gain real confidence. These are not just workbooks; they are tools for empowerment, created by a student who understands firsthand the challenges and triumphs of learning.

As an entrepreneur myself, instructor and coach, it is profoundly inspiring to see a young leader identify a need and dedicate herself to meeting it with creativity, skill, and intention. Ice's work embodies the entrepreneurial spirit at its best: finding solutions, making an impact, and lifting others along the way.

Congratulations, Ice, on yet another remarkable achievement. Your dedication is not only helping children master mathematics but also planting seeds for a generation of thinkers and problem-solvers who will carry your inspiration forward.

Foreword by Kariene Jonker

Elementary and Middle School Mathematics Teacher

I am Ms. Kariene Jonker, an elementary teacher with a great passion for teaching math at Westside Montessori school in Houston.

During my years of teaching, I have taught many wonderful students and Ice certainly was one that stood out. Even as a young learner she showed not only natural curiosity, creativity and determination but most definitely a driven passion to help others understand and spark the love for math!

Watching Ice grow over the years into a confident leader has been such a joy. What has always impressed me is not only her strong talent in mathematics, but also her ability to share that passion with others. She never just focused on solving problems—she wanted to understand math deeply and make it enjoyable for her classmates too. That spark has continued to grow.

Now, that passion has turned into something truly special: the Elementary Mathematics Book Series, written and created by Ice herself. This series is not just about practice problems, it's colorful, engaging, and built with young learners in mind. Each book uses visuals, mental math strategies, and creative techniques that make math less intimidating and a lot more fun.

What makes this even more remarkable is that this is the third book in her series. Each one builds on the last, adding new ideas step by step in a way that kids can understand and enjoy. She includes clever mental math tricks, Vedic math methods, and interactive examples that make math exciting and approachable. The fact that Ice, once an elementary student herself, is now writing books to inspire other children makes this achievement even more meaningful.

As a teacher, it makes me incredibly proud to see a former student take her love for learning and turn it into something that helps others. Ice's journey as a young author and entrepreneur is just beginning, and I know she will continue to do amazing things.

Congratulations, Ice, on your third book! You're not only building confidence in math for kids, you're inspiring them to see themselves as problem-solvers and leaders.

Introduction

This book is perfect for middle school students who want to excel in and enjoy mathematics. It is designed to enhance problem-solving and critical-thinking skills in a fun and engaging way.

To make learning math more accessible and enjoyable, various innovative methods have been developed, such as Vedic Mathematics, Singapore Mathematics, and Mental Mathematics. These approaches are widely taught in different countries, each offering unique benefits. *Competent Skills* is an accessible resource designed to reinforce mathematical concepts and methods through effective instructional techniques.

This is the third book in a series of five, progressively increasing in difficulty. The math tricks and strategies in this book become more challenging and are ideal for 6th-grade students or anyone learning at a sixth-grade level.

Vedic Mathematics

Vedic Mathematics is an ancient system of Indian mathematics that consists of a set of techniques or "sutras" (aphorisms) to solve mathematical problems in a more straightforward and faster way. These techniques are derived from ancient Indian texts known as the Vedas, specifically the "Atharvaveda". The system was popularized in the 20th century by Jagadguru Swami Bharati Krishna Tirthaji Maharaj, who authored a book titled "Vedic Mathematics" in 1965, which compiled 16 sutras (formulas) and 13 sub-sutras (sub-formulas) that cover a wide range of mathematical concepts.

Key Features of Vedic Mathematics

Simplicity and Speed: The methods in Vedic Mathematics are designed to be simple and enable quick calculations. The concepts are very efficient compared to conventional methods, especially for algebra, geometry, and higher levels.

Versatility: The techniques can be applied to a variety of mathematical problems, including addition, subtraction, multiplication, division, square roots, cube roots, algebraic equations, and complex calculations.

Mental Calculation: Vedic Mathematics emphasizes mental math techniques, encouraging the user to perform calculations in their head without the need for paper or calculators.

Flexibility: There are often multiple ways to solve a problem using Vedic methods, providing flexibility, and encouraging creative approaches.

Pattern Recognition: Vedic Mathematics often involves recognizing patterns and using them to simplify complex calculations. For instance, certain multiplication techniques involve specific patterns that reduce the complexity of the calculation.

Vedic Math Example:

One Vedic Mathematics technique is called "Ekadhikena Purvena," which means "one more than the previous one." This is particularly useful for finding squares of numbers ending in 5. For example, to find the square of 15:

Take the number before 5, which is 1.

Add 1 to it, so $1 + 1 = 2$.

Multiply this sum by the original number before 5, so $2 \times 1 = 2$.

Write 25 at the end. The result is 225.

So, $15^2 = 225$.

Singapore Mathematics

Singapore Mathematics, similar to Vedic Mathematics, focuses on efficiency and understanding and is a teaching method that originates from the national mathematics curriculum of Singapore. It is recognized for its clear and structured approach which aims to develop students' mathematical abilities and problem-solving skills. Here is a brief overview:

Conceptual Understanding: Singapore Math emphasizes a deep understanding of core mathematical concepts rather than rote memorization of procedures.

CPA Approach: It implies the Concrete-Pictorial-Abstract (CPA) approach, where students first use tangible objects to understand a concept (Concrete), then represent these concepts with pictures or diagrams (Pictorial), and finally use mathematical symbols to express the concepts (Abstract).

Problem Solving: Students are taught to solve problems in several ways, using model drawing, number bonds, and mental calculations.

Mastery: The curriculum is designed for students to achieve mastery of a topic before moving on to more complex ideas.

Both Vedic and Singapore Mathematics encourage mental calculation and a deeper understanding of mathematical principles, but they differ in their origins, cultural context, and specific techniques used for teaching and learning mathematics. Singapore Math is adopted in various countries for its effectiveness in teaching mathematics to young learners.

Singapore Math Example:

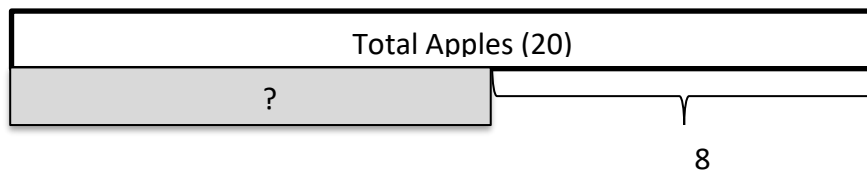
Singapore Mathematics often uses model drawing to solve word problems. For instance, if a problem states that John has 20 apples and gives away 8, how many do he have left? A Singapore Math approach would be to draw a bar model:

Draw a bar and split it into two parts.

Label one part with 20 (total apples) and the other part with 8 (apples given away).

Subtract the second part from the first to find the answer.

John has $20 - 8 = 12$ apples left.



Mental Mathematics:

Mental Mathematics, also known as mental math or mental arithmetic, is the ability to perform mathematical calculations in your head without the use of paper, pencil, or a calculator. It involves using various techniques and strategies to solve math problems quickly and accurately. Here are some key aspects of Mental Mathematics:

Number Sense: Developing a strong understanding of numbers and their relationships.

Mental Strategies: Using techniques like breaking down problems, rounding numbers, and using known facts to simplify calculations.

Practice: Regular practice to improve speed and accuracy in mental calculations.

Applications: Useful in everyday situations like calculating tips, making quick estimates, and solving problems on the spot.

Mental Mathematics is similar to Vedic and Singapore Mathematics and it emphasizes mental agility and efficient problem-solving. It is a valuable skill that can enhance overall mathematical understanding and confidence.

Mental Math Example:

A mental math strategy for multiplication is to break numbers into easier chunks. For example, to find the product of 14 and 5:

Multiply 10 by 5 to get 50.

Multiply 4 by 5 to get 20.

Add the two results together: $50 + 20 = 70$.

So, $14 \times 5 = 70$

Math in Real Life: Technology, Sports, Architecture, and Medicine

Mathematics isn't just about solving equations on a test—it's a powerful tool used in nearly every part of the modern world. Whether designing a robot, calculating a basketball shot, building a skyscraper, or saving a life in surgery, **math is at the heart of innovation and problem-solving**.

As a middle school student, learning math now means you're building the foundation to **solve real-world problems** tomorrow. You might not know exactly what career you'll choose—but with math in your toolkit, your possibilities are limitless.

Facts:

- Google's search engine is based on a math concept called **PageRank**, using linear algebra to rank websites
- Basketball players use angles and arc height (parabolas) to improve free throw accuracy.
- The ancient Greeks used the **Golden Ratio** (about 1.618) to create buildings that are still admired today for their balance and beauty.
- During the pandemic, **math models helped governments** plan lockdowns and vaccination strategies based on infection rates.

Math in Technology

- In the age of smartphones, artificial intelligence, and video games, **technology depends heavily on math**.
- **Programming & Algorithms:** Computer code uses logical steps and sequences, which are rooted in algebra, logic, and set theory.
- **Cryptography:** Online security—like encrypting password—relies on number theory and prime numbers.
- **Machine Learning & AI:** Predicting your next YouTube video or creating chatbots like this one involves statistics, probability, and matrices.
- **Computer Graphics:** Designing animations and video games uses geometry, vectors, and transformations to create realistic motion and 3D worlds.

Math in Sports

- Math plays a big role behind the scenes of your favorite sports.
- **Angles & Trajectories:** Athletes use geometry to make precise passes or perfect their jump shots.
- **Statistics & Performance:** Coaches analyze player stats like batting averages or shooting percentages to make decisions.
- **Timing & Distance:** Runners calculate pacing using $\text{speed} = \text{distance} \div \text{time}$ formulas.
- **Physics of Motion:** Swimmers and cyclists adjust their techniques using math models of force, drag, and acceleration.

Math in Architecture

- Designing buildings that are strong, safe, and beautiful? That's where geometry, measurement, and ratios come in.
- **Scale & Proportions:** Architects use ratios to create accurate blueprints scaled down from real buildings.
- **Structural Integrity:** Engineers calculate loads, forces, and material strengths using trigonometry and calculus.
- **Symmetry & Aesthetics:** Math helps design structures that are not just strong—but visually stunning (think pyramids or domes).
- **Sustainable Design:** Energy-efficient buildings use data and math modeling to reduce heat loss or solar gain.

Math in Medicine

- From diagnosing diseases to designing treatments, math is a silent partner in saving lives.
- **Medical Imaging:** X-rays, MRIs, and CT scans use advanced geometry and algebra to reconstruct 3D images from 2D slices.
- **Dosage Calculations:** Doctors calculate precise medicine doses based on a patient's weight, age, and condition.
- **Epidemiology:** Health experts use statistics to track and predict the spread of diseases—like during COVID-19.
- **Data Analysis:** Clinical trials and patient records are studied using probability and statistics to determine which treatments work best.

Whether it's an architect designing a futuristic building, a sports analyst improving a team's strategy, a tech innovator building the next robot, or a doctor diagnosing a disease—**math is the tool that makes it all possible.**

Mathematics Book Series: Path to Expert

This book, the second book of the five-book series focuses on Intermediate Skills. It will continue to build on mathematic tricks that you learned in the first book.

Focus area	Book 1 Core Skills (4th Grade)	Book 2 Intermediate Skills (5th Grade)	Book 3 Competent Skills (6th Grade)	Book 4 Advanced Skills (7th Grade)	Book 5 Expert Skills (8th Grade)
Addition					
Subtraction					
Multiplication					
Table					
Division					
Percentage					
Fraction					
Ratio					
Average					
Square					
Square Root					
Cube					
Cube Root					
Union					
Factors					
Sequence					
Distance and Time					
Number Theory					
Algebra					
Complement					
Arithmetic series					
Arithmetic Progression					
Geometry					
SohCahToa					
Diagonals					
Quadratic					
Base					
Conversion					
Quotient					
Trigonometry					
Logical Reasoning					
Precalculus					

Each book will give an easy step-by-step approach so that you can understand and memorize how to solve these Mathematics tricks, covering various Mathematics topics and easy-to-master tricks from Vedic Math, Singapore Math, and Mental Math areas.

How to Use Competent Skills (Book 3)

Middle School Mathematics: Competent Skills (Book 3) is designed for **intermediate learners** looking to strengthen their mathematical foundation and develop advanced problem-solving strategies. It builds on the concepts introduced in *Elementary Mathematics: Core Skills (Book 1)* and *Elementary Mathematics: Intermediate Skills (Book 2)* and takes students deeper into essential math techniques.

To get the best learning experience, follow these steps:

1. The book is divided into sections, with each section dedicated to explaining concepts that are either similar or help solve similar types of problems. This organization allows for coherent and logical progression through various mathematical topics, making it easier for students to build on their knowledge as they advance.
2. Each section encompasses multiple tricks; each designed to simplify and elucidate complex mathematical problems.
3. To reinforce learning, every trick is accompanied by two examples. These examples provide a visual and practical understanding of the trick, demonstrating its application and effectiveness.
4. To ensure that students can apply the concepts independently, each trick is followed by five practice problems. These problems are carefully crafted to reinforce the trick and provide ample practice.
5. At the end of each section, there is a comprehensive quiz covering all the tricks taught within that section. This quiz serves as an assessment tool, allowing students to review and consolidate their understanding of the material.

Importance of this Book

Math is indeed a foundational subject with a wide array of benefits. It helps develop critical thinking and problem-solving skills, which are essential for academic success but also for navigating everyday life. Here are some ways math skills are applied in daily life:

1. **Critical Thinking:** Math teaches logical reasoning and the ability to approach problems methodically.
2. **Problem-Solving:** Mathematical problems often require identifying patterns, making connections, and applying known methods to new situations.
3. **Attention to Detail:** Solving math problems accurately requires careful attention to detail and precision.
4. **Perseverance:** Working through challenging problems builds resilience and persistence, valuable traits in life.
5. **Practical value:** By incorporating math into everyday activities and other academic subjects, kids can see its practical value and develop a stronger appreciation for the subject.

Who will benefit from this book?

This book is designed to benefit a wide range of students, from those who are just beginning to learn foundational math concepts to those who have developed a passion for mathematics and are looking to prepare for math competitions. It provides a comprehensive and structured approach to learning that caters to the diverse needs and abilities of young learners.

For Intermediate Learners

For students who have a basic understanding of mathematical concepts and are ready to take their skills to the next level. It is ideal for students to strengthen their problem-solving abilities, improve their speed and accuracy, and build a solid foundation for more advanced topics.

For Advanced Learners

For students who have already developed a strong interest in mathematics, this book serves as a valuable resource to deepen their understanding and enhance their skills. Advanced learners will find challenging problems and sophisticated techniques that push the boundaries of their knowledge and abilities.

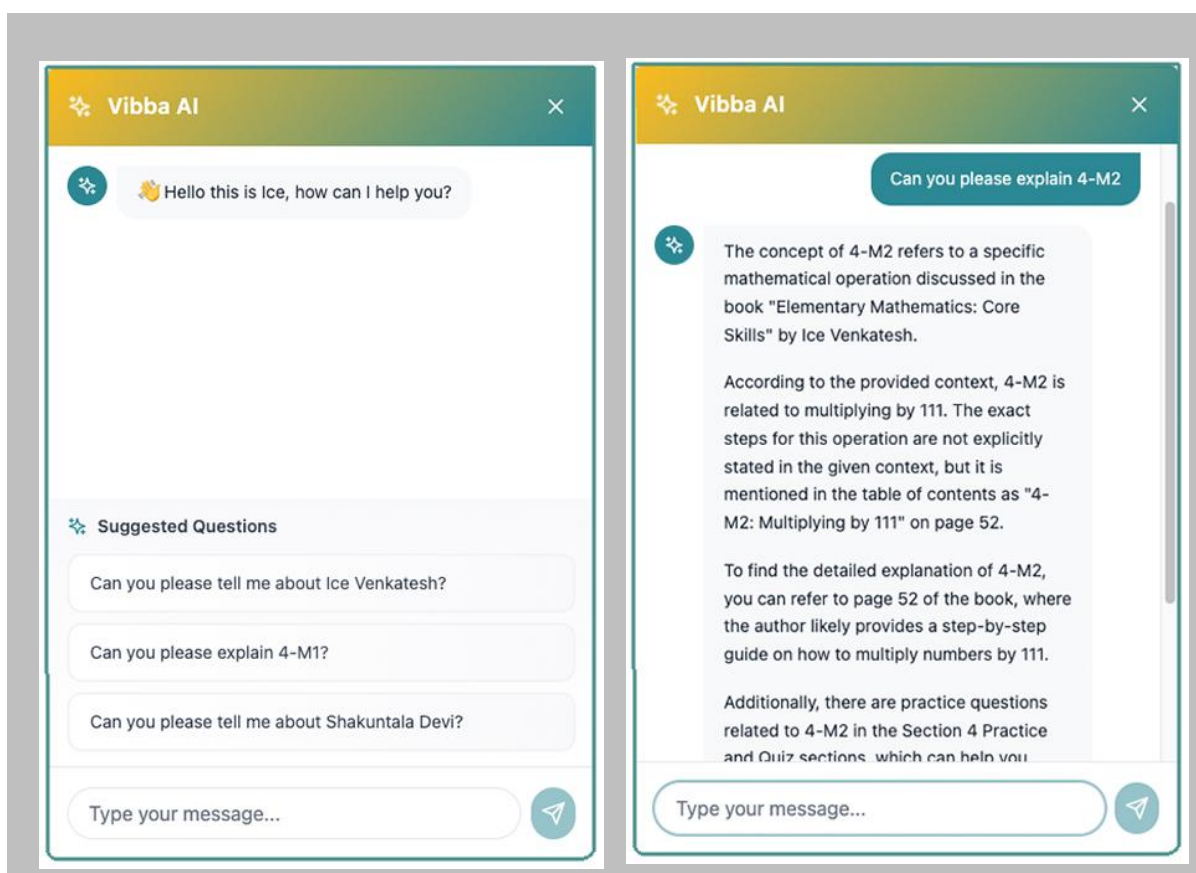
Preparing for Math Competitions

This book is an indispensable tool for students aspiring to excel in math competitions. It includes a variety of problem-solving strategies, tips, and tricks that are commonly used in competitive math. The exercises and problems are designed to simulate the types of questions encountered in competitions, providing students with ample practice and exposure.

Personalized Learning Assistance: Vibba AI Bot

Vibba has introduced the Vibba AI Bot, a personalized assistant designed to enhance students' math learning journey. By offering tailored practice problems, real-time feedback, and interactive challenges based on Elementary Mathematics Book 1 and Book 2 and Middle School Mathematics Book 3, the AI Bot helps students build their skills at their own pace. It's particularly useful for those preparing for competitive exams, ensuring a more engaging and efficient way to master math concepts. The bot adapts to students' learning paces and provides engaging challenges, like math quizzes and famous mathematician trivia, to keep learning fun. It also offers immediate error correction and encourages critical thinking, making it a valuable tool for preparing for competitions like TMSCA and Math Olympiad.

You can access Vibba AI Bot at https://vibba.com/ai_assistant/



In-depth Online Classes

Middle School Mathematics: Competent Skills (Book 3) is designed for students who want to strengthen their mathematical foundation and enhance their problem-solving abilities. Mathematics is a key component of STEM (Science, Technology, Engineering, and Mathematics) education, and developing strong skills at this stage helps students build confidence and prepare for more advanced concepts in the future.

This book introduces a variety of innovative problem-solving techniques that make learning math more engaging and effective. It covers essential strategies, including mental math shortcuts and logical approaches, to help students tackle complex problems with ease. These methods not only improve computational speed but also encourage analytical thinking, which is crucial for success in mathematics and beyond.

To further support students, we offer in-depth online classes through our website, [Vibba.com](https://vibba.com). These classes provide step-by-step guidance on mastering math tricks and concepts, making it easier for students to apply what they learn in real-world scenarios. Whether preparing for competitive math contests like TMSCA, AMC, MATHCOUNTS, Texas Math League and Math Olympiad or simply looking to excel in school, this book and our online resources will give students the tools they need to succeed.

With a structured approach, engaging exercises, and expert guidance, *Middle School Mathematics: Competent Skills (Book 3)* empowers students to take their math skills to the next level.

Additional Resources

Answer sheets for all practice problems and section quizzes are provided at the end of the book. For further convenience and support, these answer sheets are also available on the Vibba website ([Vibba.com](https://vibba.com)). This dual availability ensures that students and educators have easy access to the answers, facilitating a smooth learning and teaching experience.

Section 3-1

3-1-M1: Multiplying by 37

When:

Multiplying the number by 37

How:

1. Divide the non-37 number by 3
2. Multiply the result of step 1 by 111

Note: $37 = 111/3$

Visual Flow:

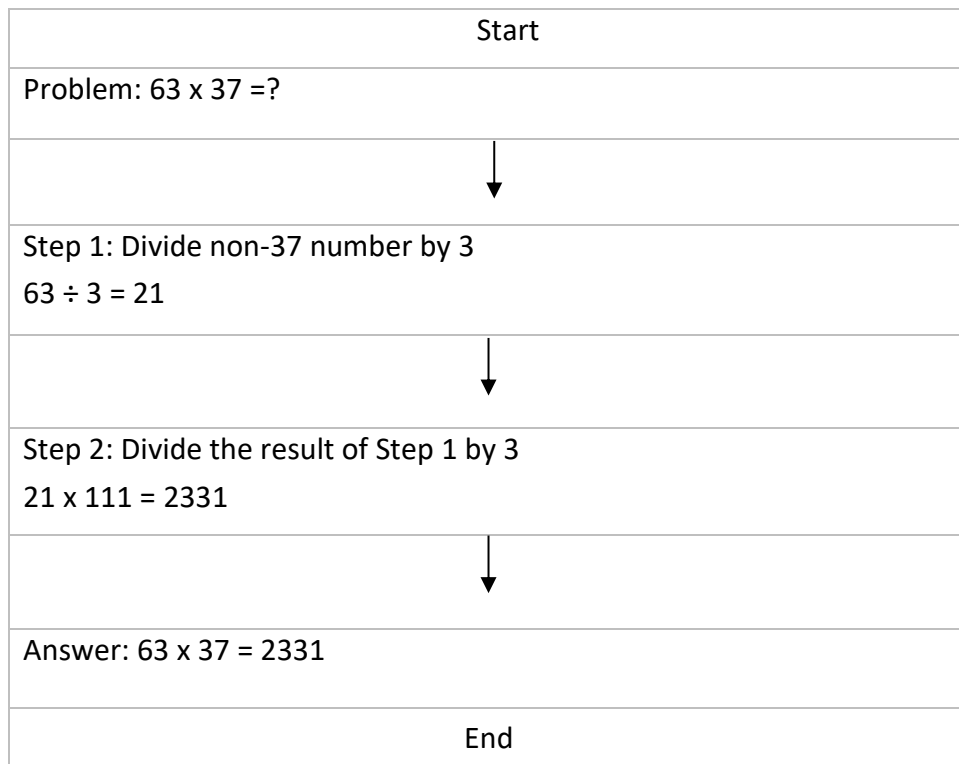


Figure 1: 3-1-M1: Multiplying by 37

Example and Practice Questions

Example 1	Practice Questions
Problem: $24 \times 37 = ?$ Step 1: $24 \div 3 = 8$ Step 2: $8 \times 111 = 888$ Answer: $24 \times 37 = 888$	1. $120 \times 37 =$ 2. $48 \times 37 =$ 3. $9 \times 37 =$ 4. $36 \times 37 =$ 5. $18 \times 37 =$
Example 2	
Problem: $42 \times 37 = ?$ Step 1: $42 \div 3 = 14$ Step 2: $14 \times 111 = 1554$ Answer: $42 \times 37 = 1554$	

Table 1: 3-1-M1: Multiplying by 37

3-1-M2: Multiplying by 143

When:

Multiplying any number by 143

How:

3. Divide the non-143 number by 7
4. Multiply the result of step 1 by 1001

Note: $143 = 1001/7$

Visual Flow:

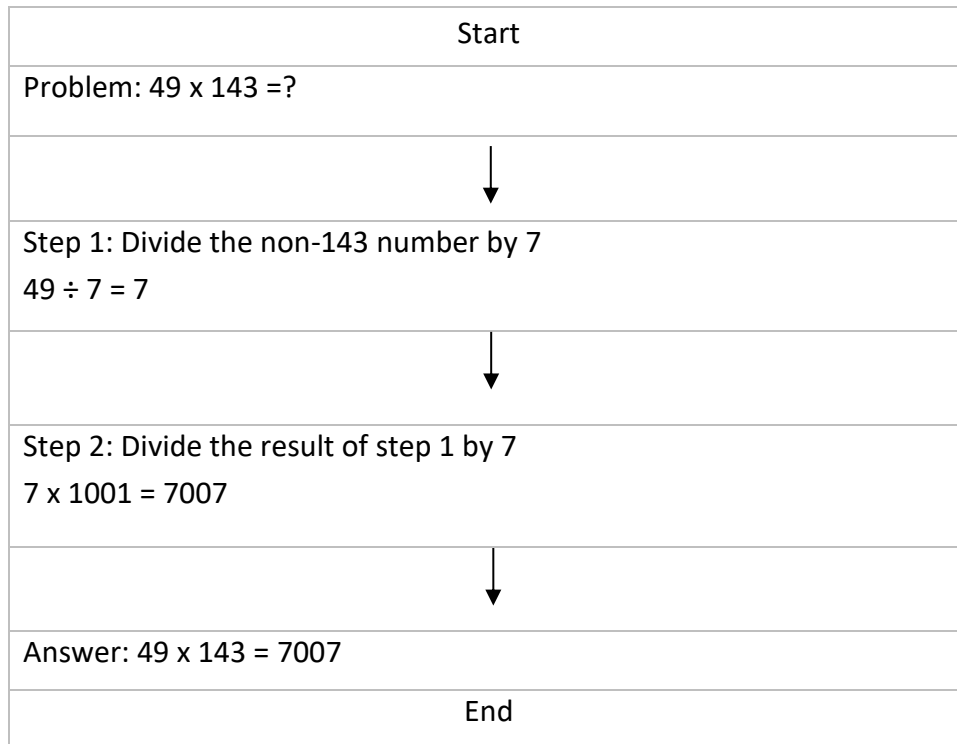


Figure 2: 3-1-M2: Multiplying by 143

Example and Practice Questions

Example 1	Practice Questions
Problem: $14 \times 143 = ?$ Step 1: $14 \div 7 = 2$ Step 2: $2 \times 1001 = 2002$ Answer: $14 \times 143 = 2002$	1. $63 \times 143 =$ 2. $7 \times 143 =$ 3. $21 \times 143 =$ 4. $56 \times 143 =$ 5. $35 \times 143 =$
Example 2	
Problem: $28 \times 143 = ?$ Step 1: $28 \div 7 = 4$ Step 2: $4 \times 1001 = 4004$ Answer: $28 \times 143 = 4004$	

Table 2: 3-1-M2: Multiply by 143

3-1-M3: Multiplying by 3367

When:

Multiplying any number by 3367

How:

1. Divide the non-3367 number by 3
2. Multiply the answer of step 1 answer by 10101

Note: $3367 = 10101 / 3$

Visual Flow:

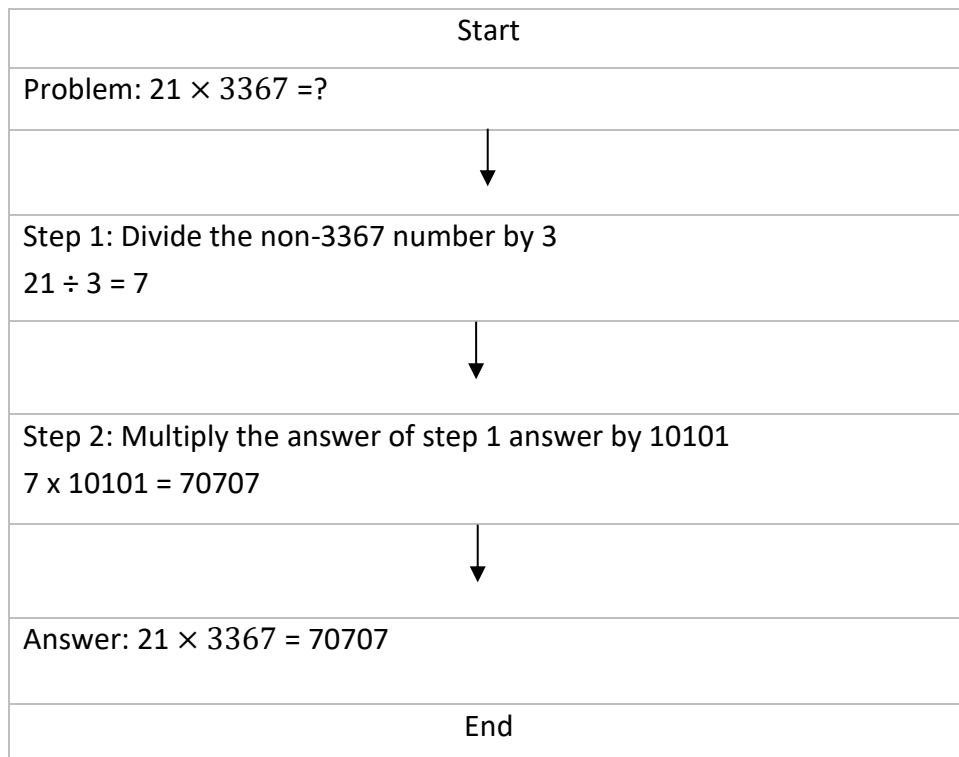


Figure 3: 3-1-M3: Multiplying by 3367

Example and Practice Questions

Example 1	Practice Questions
Problem: $18 \times 3367 = ?$ Step 1: $18 \div 3 = 6$ Step 2: $6 \times 10101 = 60606$ Answer: $18 \times 3367 = 60606$	1. $42 \times 3367 =$ 2. $15 \times 3367 =$ 3. $24 \times 3367 =$ 4. $21 \times 3367 =$ 5. $36 \times 3367 =$
Example 2	
Problem: $48 \times 3367 = ?$ Step 1: $48 \div 3 = 16$ Step 2: $16 \times 10101 = 161616$ Answer: $48 \times 3367 = 161616$	

Table 3: 3-1-M3: Multiplying by 3367

Section 3-1 Order these Steps

Arrange the steps for the following tricks. Please write down the step number in the left column to solve this math trick.

3-1-M1: Multiplying by 37

Step Numbers	Actions
Step:	Divide the non-37 number by 3
Step:	Multiply the result of step 1 by 111

3-1-M2: Multiplying by 143

Step Numbers	Actions
Step:	Multiply the result of step 1 by 1001
Step:	Divide the non-143 number by 7

3-1-M3: Multiplying by 3367

Step Numbers	Actions
Step:	Divide the non-3367 number by 3
Step:	Multiply the step 1 answer by 10101

Section 3-1 Quiz:

The following quiz comprises 18 questions designed to assess your understanding of the tricks taught in Section 3-1. Begin by identifying the appropriate trick to apply for each problem and then follow the steps to solve it. Answers are available at the end of the book.

Quiz			
1.	$3367 \times 6 = ?$	10.	$143 \times 28 = ?$
2.	$143 \times 7 = ?$	11.	$3367 \times 18 = ?$
3.	$37 \times 45 = ?$	12.	$37 \times 21 = ?$
4.	$143 \times 14 = ?$	13.	$3367 \times 24 = ?$
5.	$3367 \times 12 = ?$	14.	$143 \times 49 = ?$
6.	$37 \times 6 = ?$	15.	$3367 \times 39 = ?$
7.	$3367 \times 75 = ?$	16.	$37 \times 27 = ?$
8.	$37 \times 12 = ?$	17.	$143 \times 63 = ?$
9.	$143 \times 21 = ?$	18.	$37 \times 36 = ?$

Table 4: Section 3-1 Quiz

Quick Reference Guide: Length Conversions

Length Conversion Made Simple: A Handy Reference for Students

■ Metric System (Easy: Multiply or Divide by 10)

1 m = 10 dm	1 m = 100 cm	1 m = 1000 mm
1 m = 0.1 dam	1 m = 0.01 hm	1 m = 0.001 km
1 km = 10 hm	1 km = 100 dam	1 km = 1000 m

■ Imperial & Other Conversions

1 inch = 0.083 ft	1 inch = 0.0254 m	1 inch = 2.54 cm
1 foot = 12 inches	1 foot = 0.3048 m	1 foot = 30.48 cm
1 yard = 3 feet	1 yard = 0.9144 m	1 yard = 91.44 cm
1 fathom = 6 feet = 2 yards	1 rod = 5.5 yards = 16.5 ft	1 furlong = 220 yd = 660 ft
1 mile = 1.60934 km	1 mile = 1760 yd	1 mile = 5280 ft
1 nautical mile = 1.15078 miles	1 nautical mile = 1.852 km	

■ Quick Tips for Mental Math

- Move Decimal for Metric: Multiply or divide by 10 (Example: 1 m → 100 cm → 1000 mm) •

Approximation Hacks:

- 1 inch ≈ 2.5 cm (Think: 2 and a half!)
- 1 meter ≈ 3.3 feet
- 1 km ≈ 0.62 miles

■ Fun Memory Tricks

- Inches to cm? → Think 2, 5, 4 → 2.54 cm per inch • 1 yard is like 1 big step → 3 feet or almost 1 meter • 1 mile ≈ 1.6 km → Think: 1 → 6
- 1 foot ≈ 30 cm → Imagine a ruler (30 cm) = 1 foot • 1 km is about 10 football fields

“Mathematics is the language with which God has written the universe.”

– Galileo Galilei

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William Johnston, Alex McAllister: *A Transition to Advanced Mathematics*

Useful Links

Number	Description	Website address
1.	Vibba	https://Vibba.com
2.	Vibba AI Chat Bot	https://vibba.com/ai_assistant
3.	TMSCA	https://www.tmsca.org
4.	Mathematical Olympiad	https://moems.org
5.	The International Mathematical Olympiad (IMO)	https://www.imo-official.org
6.	American Mathematics Competitions	https://maa.org/student-programs/amc/
7.	Lemonade With Ice Charity	https://lemonadewithice.org

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About The Author



Ice Venkatesh, a recognized state medalist, has excelled in her own academic and professional pursuits. She is a member of Mu Alpha Theta, National High School and Two-Year College Mathematics Honor Society. She mentors numerous students to achieve top honors in prestigious mathematics competitions and examinations. Her unwavering dedication, passion, and expertise make her a valuable asset to the educational community, where she strives to ensure every student receives the highest quality instruction and support needed to succeed.

Ice has combined her profound knowledge of Singapore, Vedic, and Mental Math into this comprehensive book series. This initiative is designed to provide students with a solid foundation in essential mathematical concepts that are crucial for their academic journey. This is the third book in the series, continues to build on the fundamental principles of math, aligning with the curriculum requirements and preparing students for competitive math events such as the AMC (American Mathematics Competitions), TMSCA (Texas Math and Science Coaches Association), MATHCOUNTS, and the Math Olympiad.

Ice is helping The Village School as a Teacher's Assistant (TA) for the mathematics department. She loves teaching math, cultivating problem-solving skills, and building the confidence necessary for students to excel in academic areas. Her work in this book series is an extension of her lifelong mission to nurture young minds and guide them toward success.

Ice is deeply committed to advancing educational opportunities for young girls, particularly in the fields of STEM, recognizing the importance of empowering young girls to pursue their academic goals. She founded a non-profit organization, Lemonade with Ice, dedicated to this cause. Through this organization, she has established a comprehensive scholarship program that provides financial support, resources, and mentorship to young girls, ensuring they have access to quality education. This scholarship program is designed to assist with educational expenses and encourage girls to pursue careers in STEM, fostering a new generation of female leaders. Ice's work through the non-profit reflects her lifelong commitment to gender equality in education and her belief in the transformative power of learning.

To learn more about this impactful initiative and how you can support the cause, please visit LemonadewithIce.org.

For more information about personalized math learning and the tailored educational programs offered, please visit Vibba.com