GOOD YEAR BOOKS

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Arithmetricks

Second Edition

More Than 100 AMAZING Math Tricks

Jeri S. Cipriano

GOOD YEAR BOOKS

Dedication

For the number one family in my life: Bill, Rachel, Marco, and Max, and in loving memory of my mother, on whom we've always counted.

A Note to Parents and Teachers

This book encourages a child's enthusiasm for hands-on fun while building important math skills in subtle ways. The creative activities are unlike textbook drills, yet they, too, provide practice with computations, following directions, logic, problem-solving, visual discrimination, graphs, patterns, proportions, shapes, time, and measurements.

Children who are motivated to engage, to take risks, to "stretch," will, no doubt, have their efforts rewarded by a deeper understanding of and appreciation for math. They'll probably find an improvement in school math as well, which comes as the result of increased confidence, interest, and practice.

Whenever possible, encourage math activities at home, such as reading sports scores and stats, following recipes, building and doing crafts, making graphs and charts, working on puzzles, and so on. Whenever kids experience the thrill of cracking a code or making a discovery, they will be reinforcing their love of math mystery.

GOOD YEAR BOOKS

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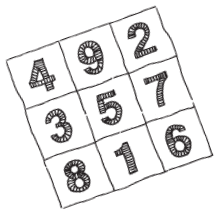
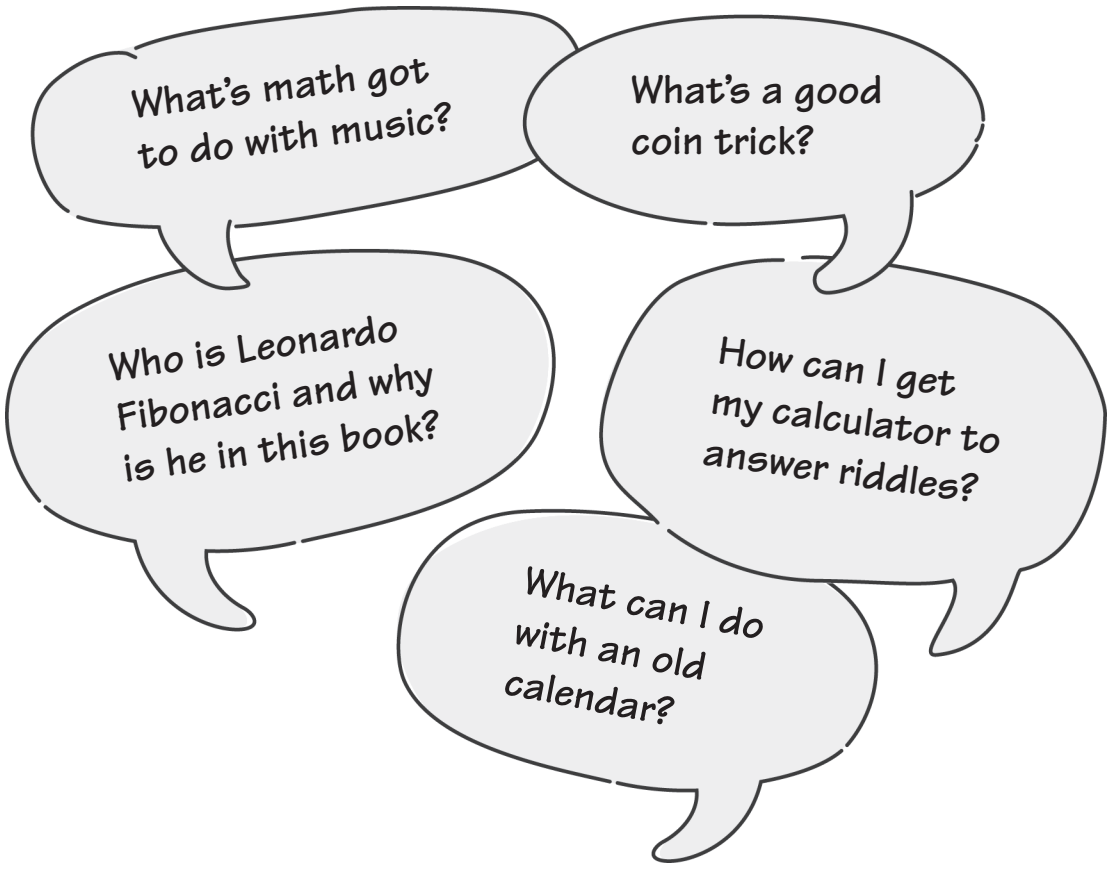


Preface

Be a mind reader . . . decode secret messages . . . learn magic!

With just this book, a pencil, and some paper, you can spend googols of fun time! *Googols!!?* Did someone say *googols?* Yes, using just that one word will impress people. (See page 29.) Do you want to really amaze your friends? Would you like to stump a few teachers, too? Then check out the tricks, puzzles, and facts in this book.

You can see that this book is nothing like a textbook. But all the activities have to do with math. You can start anywhere or skip around. You'll probably find that the more fun you have with this book, the better you'll do in math. So sharpen your pencils and get set to find the answers to these questions and more!



For Openers: Math Counts!

Each year you study math in school. Did you ever wonder why? Questions about math may not be up front in your head. Still, you'll probably find these facts interesting.

How old is math?

Math is the study of numbers, shapes, and space. Did they do math in ancient times? You bet! In fact, math goes w-a-y back—all the way back to the beginning of the human race. You may wonder why cave people needed math 10,000 years ago. But remember: Even cave people had to keep track of their food and belongings.

What was early math like?

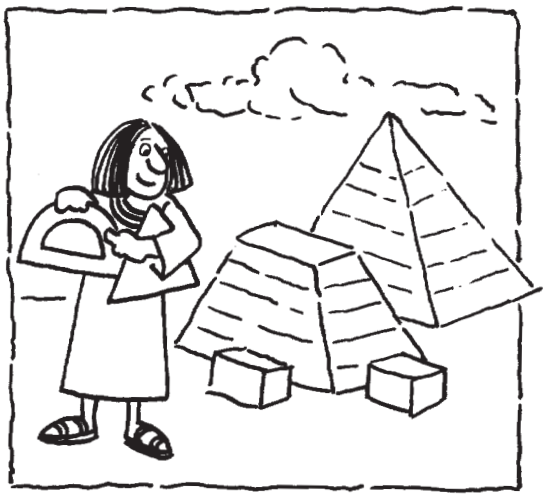
No one knows for sure who first used math. But people throughout time have needed math to help solve problems. The first math was some kind of counting system. Then, when people started farming, they needed calendars to mark time and note the seasons for planting.

How did math keep up with people?

People began making things by hand. They began building. They needed tools. They needed weapons to protect themselves. Counting was not enough. Now people needed to know how to measure and calculate. Pretty soon, people started adding, subtracting, multiplying, and dividing. Then fractions were added.

How did math continue to grow?

Around 300 B.C., a man named Euclid wrote a series of books in ancient Greece that laid the foundation for much of the *geometry* that we still use today. Geometry is the study of shapes and angles. People needed geometry to learn about sizes and shapes. They needed geometry to measure land and to build great monuments.



As business and industry grew, money was invented, and, later, clocks were created to measure the business day.

At sea, sailors first used the stars to help guide them across oceans. Later, *trigonometry* made their work more accurate. (Trigonometry is the study of distances and directions.) *Algebra*, the study of variables and the operations of arithmetic with variables, developed over time. Algebra—the way it is done today—began in 1591 when French mathematician François Viète used letters of the alphabet to describe patterns.

How are science and math related?

As the field of science grew, so did math. Understanding gravity or how the Moon orbits the Earth or the speed of a rocket ship requires calculations. Sir Isaac Newton invented *calculus* to help scientists deal with these complicated issues. Scientists also rely on math to study the human body in its smallest parts. Albert Einstein's mathematics helped unlock the secrets of the atom and advanced science's study of life.

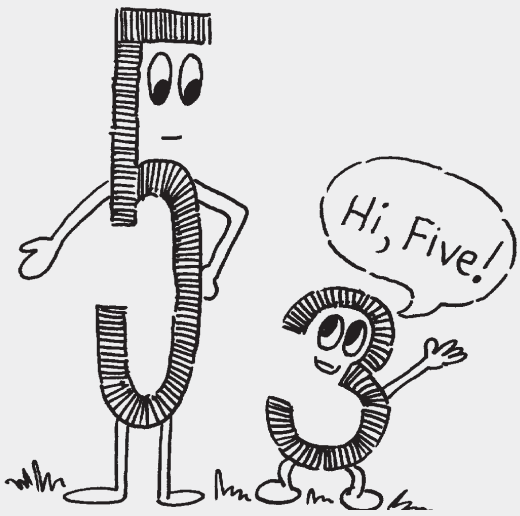
Do we have all the math we need now?

Today, computers are helping us solve problems faster than ever before. But the human race keeps developing. Some day new questions will arise and people will look to math for the answers. New branches of math will grow out of our need to find solutions to the challenges that lie ahead. One thing is sure. When it comes to advancing the human race, math *counts!*

Arithmetricks:

Number Stunts

In this section, you'll find enough number tricks for several magic shows. You'll leave your audience speechless when you provide instant answers, read their minds, and perform extraordinary number feats. You'll also learn how to create magic squares and fun figures and do interesting tricks with calendars. Are you ready for a good time? Then, go figure!



Time to Show Off

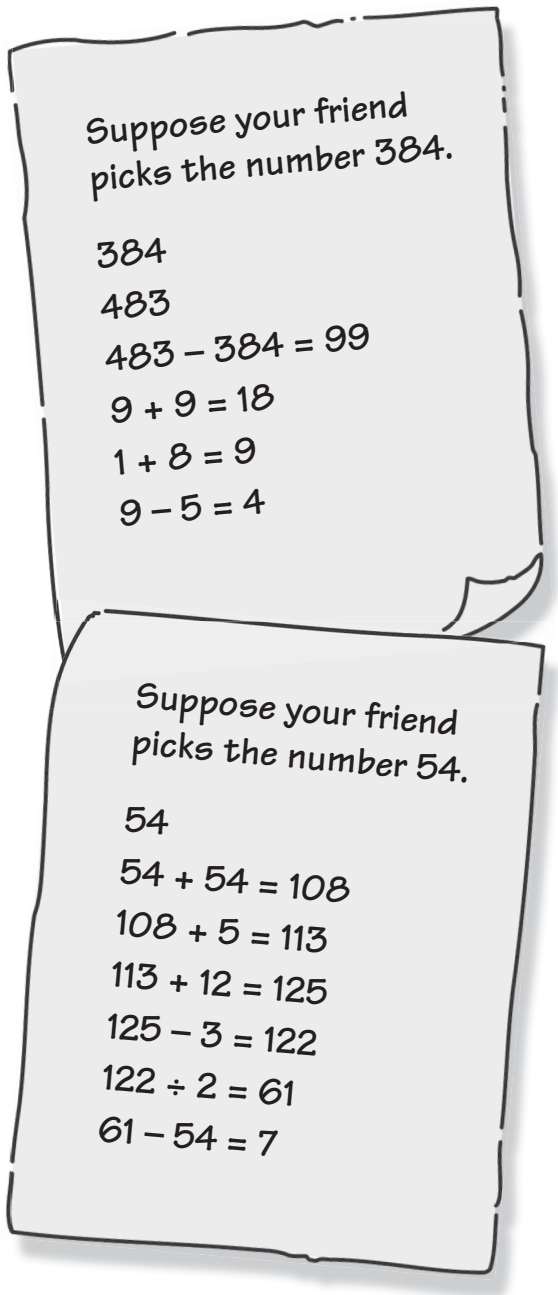
You'll stun your audience with these magic number tricks.

Just "Four" You

Give a friend the following directions:

- Write a three-digit number.
- Mix up the digits to get another three-digit number.
- Subtract the smaller numbers from the larger.
- Add the digits in the difference. (If you get a two-digit answer, add the two digits to get a single digit.)
- Subtract 5 to get a final number.

Now put your hand to your forehead and look like you're concentrating. Then say: "Your number is 4!" (Try it. It works every time.)



I've Got Your Number

Write the number 7 on a piece of paper and keep it in your pocket. Then give the following directions:

- Think of a number from 1 through 99.
- Double your number.
- Add 5.
- Add 12.
- Subtract 3.
- Divide it in half.
- Subtract your original number.

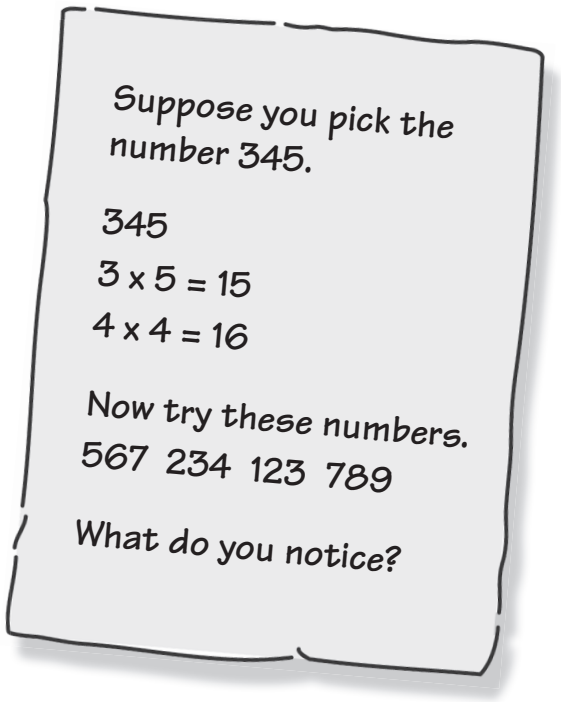
Take out the paper from your pocket. Say, "Your number is 7!" Show the paper to your friend to really impress him or her.

One Up!

Try this one yourself. Then share it with a friend.

- Write a three-digit number in which the three digits are consecutive.
- Multiply the largest digit by the smallest.
- Now multiply the middle digit by itself.

What do you notice?



Fun Fact

No matter how many times you multiply 1 by itself, you'll always get 1. That can't be said for any other number.

Gotcha!

Here are five more mind-reading tricks.

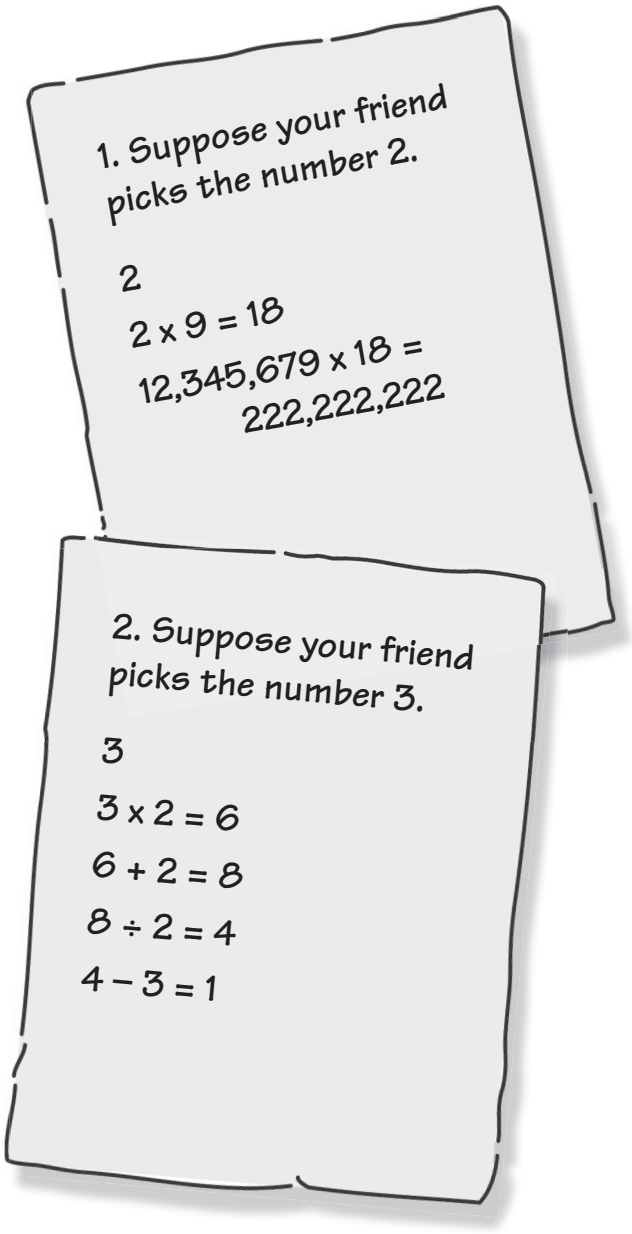
1. *On a sheet of paper; write this "magic number": 12,345,679.*

- Ask a friend for a number from 1 through 9. In your head, multiply your friend's number by 9. Write down the answer.
- Now have your friend multiply the magic number by the number you just wrote.
- SURPRISE! The answer will be made up entirely of the number your friend gave you.

2. *Tell your friend the following:*

- Choose a number from 1 through 5.
- Double it.
- Add 2.
- Divide by 2.
- Subtract your original number.

Say: "The answer is 1!"



3. Tell your friend:

- Think of a number—any number:
- Multiply your number by 2.
- Add 4.
- Divide by 2.
- Subtract your original number.

Say, "The answer is 2!"

4. Tell your friend:

- Write a number:
- Add 9.
- Multiply by 2.
- Subtract 4.
- Divide by 2.
- Subtract your original number.

Say: "The answer is 7!"

5. Tell your friend:

- Think of a number from 1 through 100.
- Multiply your number by 3.
- Add 6 to that number.
- Divide that number by 3.

Ask your friend what that number is. All you have to do is subtract 2 from that number to get your friend's original number.