

HOW TO BE A MATH REBEL

CREATIVE PROBLEM SOLVING FOR ADVENTUROUS STUDENTS

Take your stand against boring, routine homework.
Fight for truth, justice, and the unexpected answer.

**“A pupil is allowed to write
anything that is true,
and not allowed to write
anything untrue!
These are the only rules
of mathematics.”**

—W. W. SAWYER

DeniseGaskins.com

What Is a Math Rebel?

We study math so we can grow in our ability to understand and solve problems:

- We want to think creatively about mathematics.
- To seek out both the “how” and the “why” of procedures.
- To be fluent and flexible in applying math skills.
- To never believe something just because the book says so.
- To have confidence in our own ability to figure things out.

This is what it means to be a math rebel.

Join the Math Rebellion

Math rebels write any true answer *except* what the textbook expects.

For example, if the textbook answer is 57, a rebel might write:

$$\begin{aligned} &100 - 43 \\ &\text{or } 2 \times 5^2 + 7 \\ &\text{or } 120\frac{1}{2} + (-3) \\ &\text{or} \end{aligned}$$

“The total number of mushrooms in the basket, if three hobbits each picked nineteen ’shrooms (not counting the ones they ate).”

Math rebels can make the answer as crazy as they like. Have fun!

Understand the Math

When you get a math worksheet or homework page, don’t start working straight away. First, examine the page to see if the problems look familiar. Do you know what the teacher or textbook wants you to do?

Math rebels always care about the truth. So first, learn what the problem means and how to figure it out. After you know how to solve the problem, then you can start working on your creative answer.

Choose Your Battle

Fighting for intellectual freedom takes energy, so decide how rebellious you want to be. Are you going to mess with just a few of the problems? Or turn the whole page into a protest statement?

Live by the Two Rules

You are allowed to write anything that is true. You are not allowed to write anything that is not true.

Those are the important rules of mathematics. Anything else is just advice—follow it only when it helps you on your current problem.



Problem Solving Tip #1

NEVER GIVE UP

Fight to make sense of a problem.

Think about the things you know.

Ponder what a solution might look like.

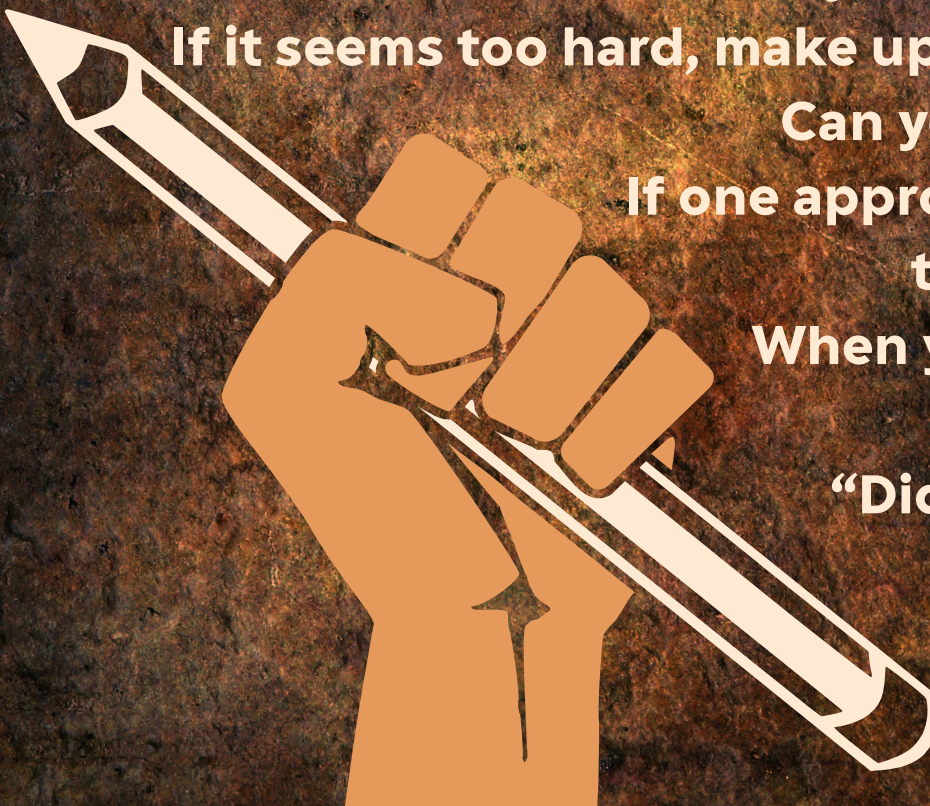
**Compare this problem to those
you solved in the past.**

If it seems too hard, make up a simpler version.

Can you solve that one?

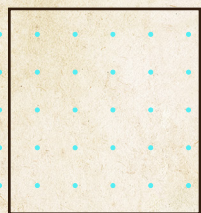
**If one approach doesn't work,
try something else.**

**When you get an answer,
ask yourself,
“Did I miss anything?”**



Warm Up Your Mental Muscles


Practice your Math Rebel skills. Pick any number, and see how many different ways you can write it. Start with a simple expression like addition or subtraction. Write an equal sign and another expression, and keep going until you fill the page or run out of ideas. What kind of fancy math will you create?



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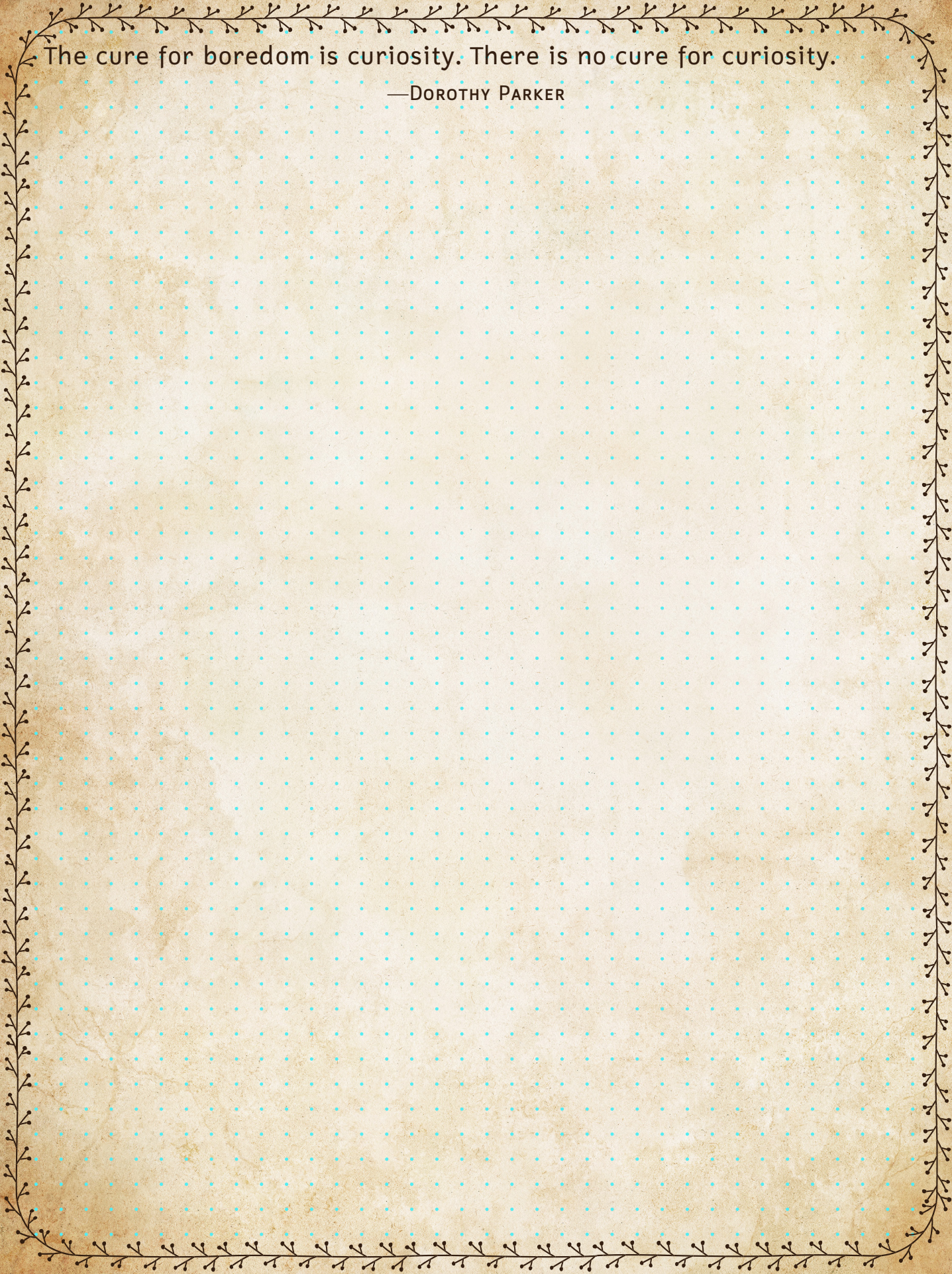
The best way to learn mathematics is to follow the road which the human race originally followed: Do things, make things, notice things, arrange things—and only then, reason about things.

—W. W. SAWYER



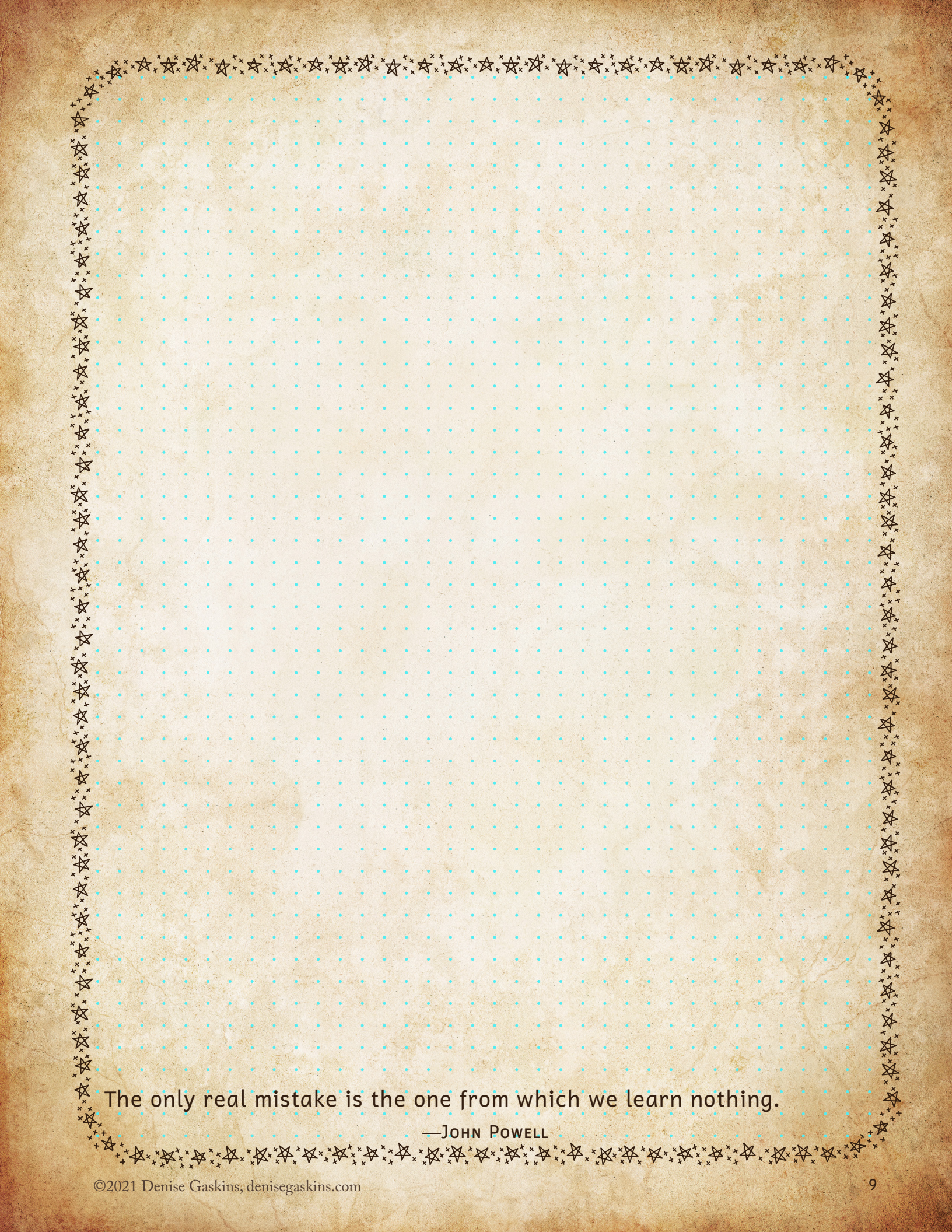
Math ain't about numbers! If you think math is about numbers, you probably think that Shakespeare is all about words. You probably think that dancing is all about shoes.

—CLIFF STOLL



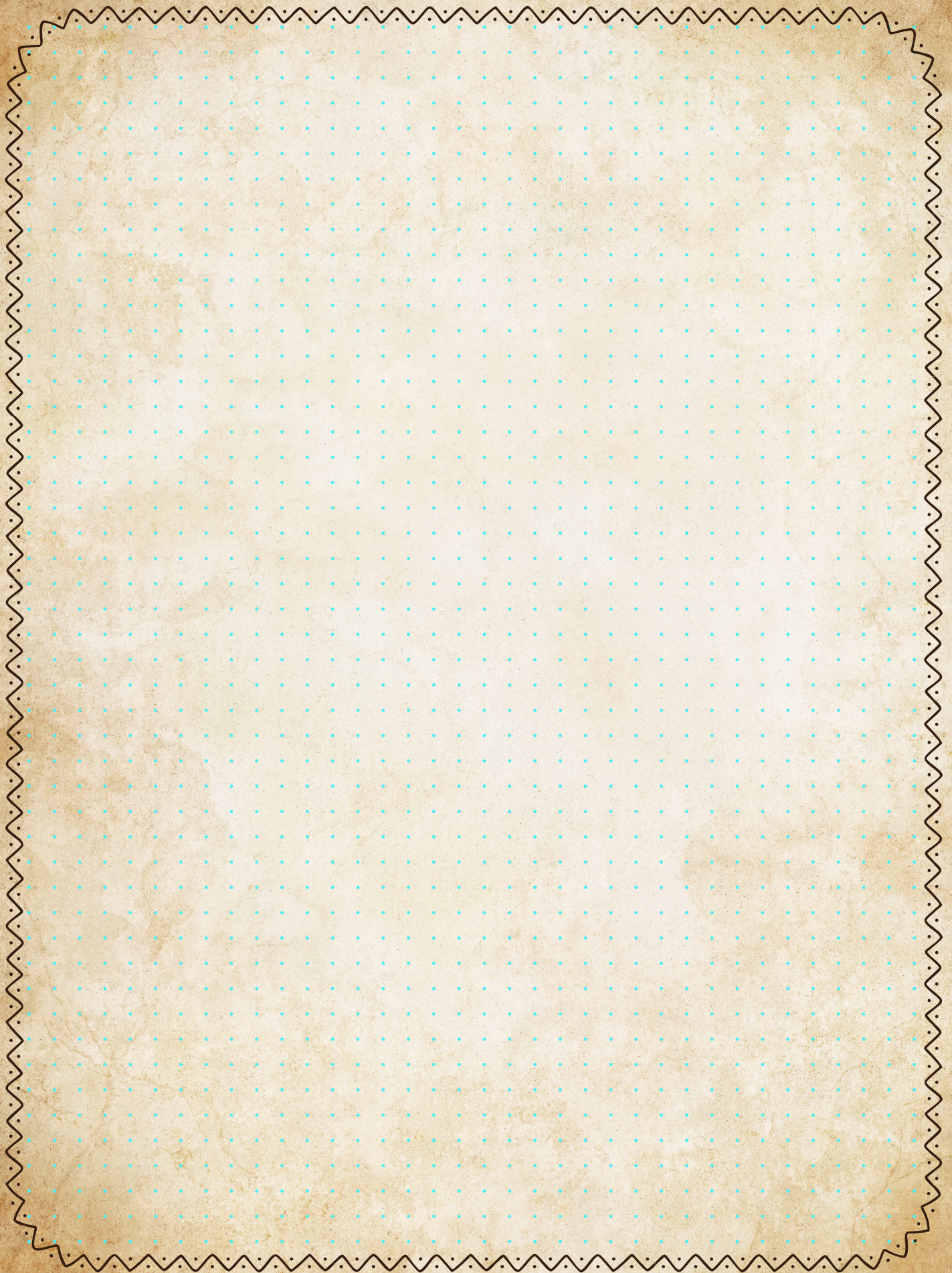
The cure for boredom is curiosity. There is no cure for curiosity.

—DOROTHY PARKER



The only real mistake is the one from which we learn nothing.

—JOHN POWELL





Playful Math Books by Denise Gaskins

tabletopacademy.net/playful-math-books

"Denise has gathered up a treasure trove of living math resources for busy parents. If you've ever struggled to see how to make math come alive beyond your math curriculum (or if you've ever considered teaching math without a curriculum), you'll want to check out her books."

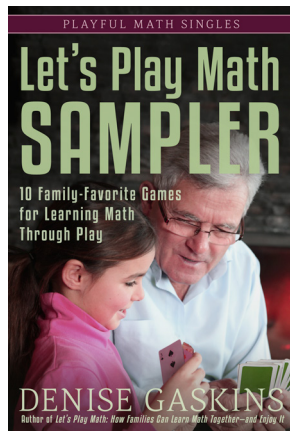
— Kate Snow, author of *Multiplication Facts That Stick*

Start Here: *Let's Play Math Sampler*

Do you want your children to enjoy learning math? Teach them how to play!

In excerpts from author Denise Gaskins's most popular books, the *Let's Play Math Sampler* features ten kid-tested games covering math concepts from counting to prealgebra.

Get the *Let's Play Math Sampler* and discover how to make math a playful family adventure.



Or Go Directly to *Let's Play Math*

Transform your child's experience of math!

Even if you struggled with mathematics in school, you can help your children enjoy learning and prepare them for academic success.

Denise makes it easy with this mixture of math games, low-prep project ideas, and inspiring coffee-chat advice from a veteran homeschooling mother of five. Drawing on more than thirty years of teaching experience, she provides helpful tips for parents with kids from preschool to high school, whether your children learn at home or attend a traditional classroom.

Don't let your children suffer from the epidemic of math anxiety. Pick up your copy of *Let's Play Math: How Families Can Learn Math Together and Enjoy It*, and start bringing math alive today.

Then Explore the *Math You Can Play* Series

You'll love these math games because they give your child a strong foundation for mathematical success. By playing these games, you strengthen your child's understanding of numbers and build problem-solving strategies. Mastering a math game can be hard work. But kids do it willingly because it's fun.

Math games prevent math anxiety. Games pump up your child's mental muscles, reduce the fear of failure, and generate a positive attitude toward mathematics.

So what are you waiting for? Clear off a table, grab a deck of cards, and let's play some math.

Or Try a Playful Math Single

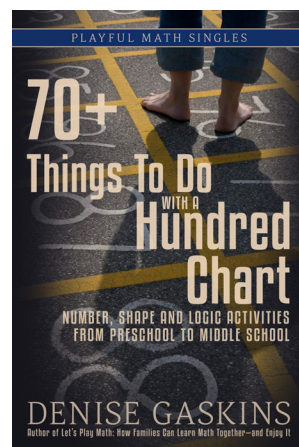
Denise's *Playful Math Singles* series features short, topical books loaded with clear explanations and ready-to-play activities.

Word Problems from Literature features story problems for elementary and middle school students based on family-favorite books such as *Mr. Popper's*

Penguins and *The Hobbit*. Step by step solutions demonstrate how to help children reason out the answer.

70+ Things To Do with a Hundred Chart shows you how to take your child on a mathematical adventure through playful, practical activities. Who knew math could be so much fun?

More titles coming soon. Watch for them at your favorite online bookstore.





PLAYFUL FAMILY MATH

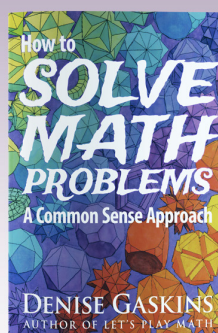
A FACEBOOK DISCUSSION GROUP

Want to help your kids learn math and enjoy it? Check out my Facebook discussion group, where you can ask questions, share articles about learning math, or tell us your favorite math games, books and resources. This is a positive, supportive group for parents and teachers (and grandparents, aunts and uncles, caregivers, or anyone else) interested in talking about math concepts and creative ways to help children learn. Let's make math a playful family adventure!

—Denise Gaskins, author of *Let's Play Math: How Families Can Learn Math Together—and Enjoy It*.

facebook.com/groups/playfulfamilymath

Or get a [free copy of my 24-page problem-solving booklet](#) when you sign up for my newsletter mailing list. Plus you'll be among the first to hear about new books, revisions, and sales or other promotions.



**A 4-Step Method
for Making Sense
of Math Problems**

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