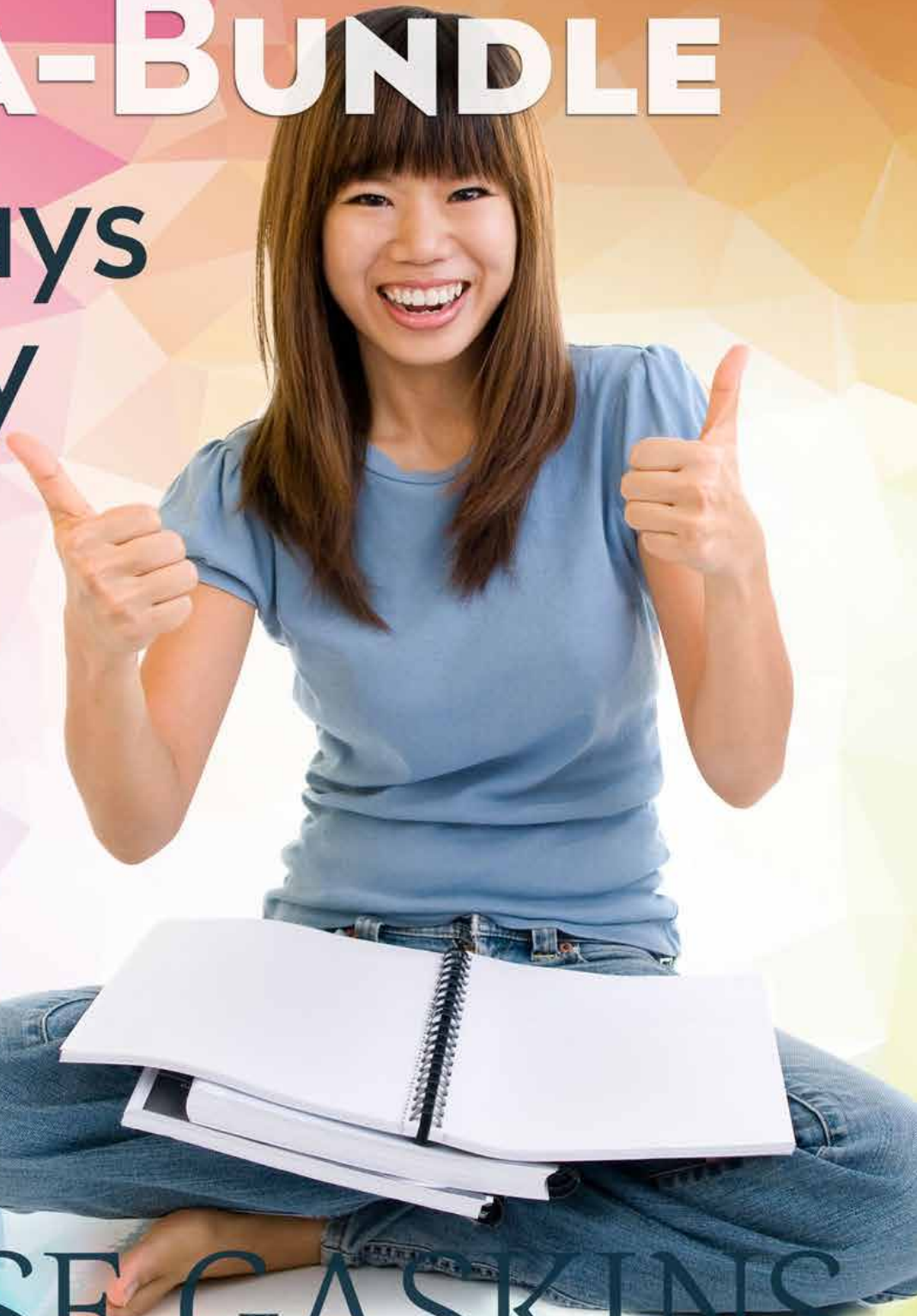
Math Journal Task Cards Mega-Bundle

312 Ways To Play with Math



DENISE GASKINS

Author of *Let's Play Math: How Families Can Learn Math Together and Enjoy It*

Introduction and Tips

"This is the wonderful thing about just thinking and playing with half-formed thoughts: often exciting ideas will flash into your brain when you least expect them."

—James Tanton

The point of math journaling is to help children explore the world of math in a new way. To enjoy playing with ideas. To value curiosity and creative thinking. And to fight for true understanding, doing whatever it takes to help math make sense.

In a journal, children examine their own concepts about numbers, shapes, and patterns through drawing or writing in response to a question. Journaling teaches them to see with mathematical eyes—not just to remember what we adults tell them, but to create their own math.

Children come to realize that learning is more than memorizing facts and procedures, and they develop a richer mathematical mindset. They begin to see connections and make sense of math concepts. They grow confident in their ability to think through new ideas.

Gather Your Supplies

There is no "right" way to do math journaling. Students may use any bound notebook or loose paper, lined or unlined, or graph paper of any type you have on hand. For written prompts, some students may prefer typing on the computer.

Personally, I love dot grid pages for journaling because I can start a line anywhere on the page, and the dots serve as anchors for drawing shapes or patterns. My favorite paper has a dotty grid spaced at ¼ inch or 0.5 cm. Young children may want wider spacing: ½ inch or 1 cm. Triangle dot paper (isometric grid) is also fun, because it encourages writing at different angles.

The Incompetech website is a great place to download graph paper of all varieties.

If your students are using a bound journal, you may want them to draw the geometry and math art prompts on blank paper. They can use the journaling page to record what math they see in their design and how they thought about creating it.

In particular, geometric constructions made with a compass and straight-edge (or a ruler) are much easier to draw on a loose sheet of plain paper. For best results, use masking tape to hold the paper in place so it doesn't shift under the compass.

In addition to your journaling paper, you will find the following supplies useful on your mathematical adventure:

- pencils, both plain and colored
- colorful gel pens
- a ruler for making straight lines
- a drafting compass for drawing circles and comparing distances
- other drafting tools, like plastic triangles or a circle template
- dice for playing games
- a deck of ordinary playing cards, poker or bridge style

Create Your Own Math

When students create their own math, they forge a personal connection to mathematical concepts and relationships. And it's fun!

Children might make up a math game, write a story or poem, draw a comic, or pose a problem. Create math art, think up a challenging question, or write a puzzle. Since earlier chapters focused on writing and math art, most of these prompts involve creating puzzles or problems.

The "Story Problem Challenge" is one of my favorite math club activities. My students invent their own word problems in any style they like. They don't have to know how to solve the problems they create. We read the stories aloud, and everyone works together to find the solutions.

For puzzles where the child already knows the answers (for example, Two Truths and a Lie), let them trade with a friend. Can they each solve the other's puzzle? Can they stump each other? Or save the child's work and let them come back to it another day, after they've forgotten the answers.

And when students create something they're proud of, let them share it with the world. Visit the Student Math Makers Gallery at tabletopacademy.net/math-makers to learn how your students can submit their own math creations.

☐ **45. Menu Math:** Create a menu for an imaginary restaurant. Include main dishes, side dish items, drinks, and desserts. Write a story for your restaurant. What math questions might you ask about your story?

☐ **46. Age Puzzles:** Jewel's father is 3 times as old as Jewel. In 10 years, he will be twice her age. How old is Jewel? Make up some age puzzles of your own.

☐ **47. Mystery Numbers:** Write equations with missing mystery numbers, like

$3 + \square = 57$

or

$(5 \times 5) + 4 = 16 + \square - 3$

Or use algebra:

$79 = (n \times 11) + 2$

Or be silly:

giraffe $\div 4 = 37 - 12$

Can you solve your mystery number equations? Or trade puzzles with a friend.

☐ **48. Two Truths and a Lie:** Pick a topic you have learned in math. Write two correct statements and one false statement. Trade with a friend. Can you find each other's fibs?

☐ **49. Math Quilt:** Draw a rectangular grid of squares on your page, like a quilt made of large, square pieces. For each piece of the quilt, color a different fraction of the square. Or color the same fraction in every square, but make each one look different.

For example, one square might represent ½, but drawn creatively (not just a line down the middle).

☐ **50. The Answer Is...:** The answer is_____. [Choose any number. Or choose a math vocabulary word.] The question could be... Can you think of more than one question? How many possible questions can you find?

☐ **51. Math Poetry—Limerick:** A limerick is a five-line poem, usually comical and sometimes quite rude. Limericks use an AABBA rhyme pattern, with three stressed beats on the A lines and two on the shorter B lines. The rhythm sounds like this:

da-DUM da-da-DUM da-da-DUM
da-DUM da-da-DUM da-da-DUM
da-DUM da-da-DUM
da-DUM da-da-DUM
da-DUM da-da-DUM da-da-DUM.

Write a limerick that includes math. For example, here is a limerick about the Collatz conjecture (prompt #145):

A crazy old man, just for fun,
Liked to triple odd numbers, plus one.
"Cut the evens in half,"
He said with a laugh,
Bouncing up, down, up, down, down, down, done.

Optional challenge: Can you figure out which Collatz hailstone number has the bouncing pattern in the last line?

☐ **52. Reinvent Your Homework 1:** Find a page of calculations in your math book, or download a worksheet online. Choose two or three of the questions. Write a story problem to match each calculation.

For example, for the calculation ¾ × 8, you might imagine a recipe that takes ¾ cup of flour. But you are planning a party and need to make eight times that amount. How much flour will you need in all?

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Write equations with missing mystery numbers, like 3 + □ = 57 or (5 × 5) + 4 = 16 + □ − 3. Or use algebra: 79 = (n × 11) + 2. Or be silly: *giraffe* ÷ 4 = 37 − 12. Can you solve your mystery number equations? Or trade puzzles with a friend.

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- [ ] **305. Movie Warehouse:** You manage the props department for a movie studio. What is in your inventory? Do you need to buy anything for an upcoming film? Write a story about your work. What math questions might you ask about your story?

- [ ] **306. Be an Author:** Choose a calculation from your math textbook or one that you make up. Write a story about the calculation. Use any genre you like: adventure, fantasy, sports, romance, science fiction, etc.

  For example, a subtraction problem might make a story about a nest of dragon eggs where some of the baby dragons hatch and fly away. How many eggs are left?

  Can you think of other math questions to ask about your story? For example, perhaps my baby dragons came in different colors. So I could ask which color had the most, or how many more green dragons were there than brown ones.

- [ ] **307. Animalgebra:** Three turtles = 60. One turtle and two fish = 30. A fish and an octopus = 50. How much is a turtle, a fish, and an octopus together?

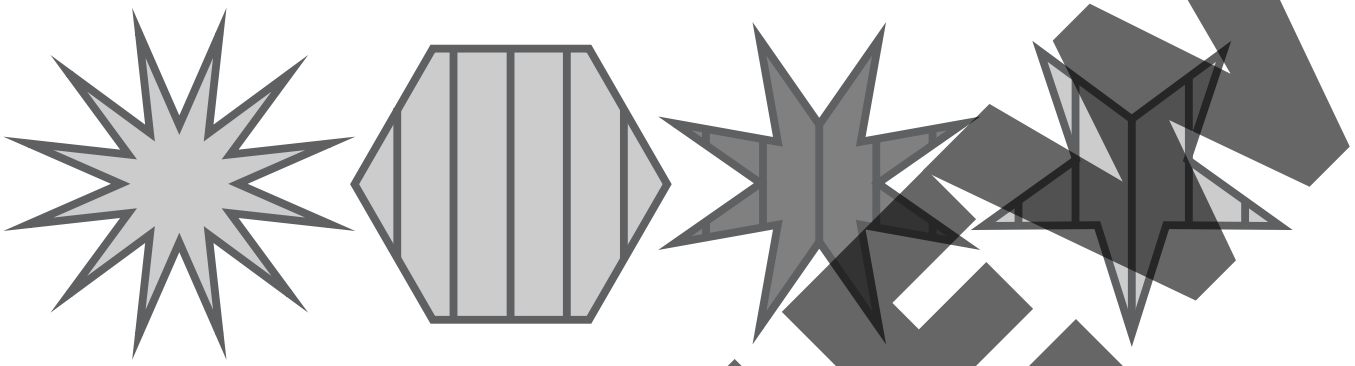
  Make up your own animal algebra puzzle. If you like, do it in pictures like a social media meme.

- [ ] **308. Invent a Game 3:** Create a variation of tic-tac-toe. What size gameboard will you use, and what are the rules for marking squares? How do you win (or lose) the game? Is it possible to have a tie?

  Try your game with a friend, and tinker with the rules until you're satisfied.

☐ **309. Make Your Own WODB:** Think of three attributes an object might have. For example, you might choose pointy, blue, and striped. Then draw four pictures. One picture should have all three attributes, and the other pictures should each be missing a different one.

Ask a friend, "Which one doesn't belong?" With a WODB puzzle, each item can be the right answer, as long as you explain why.



☐ **310. Threeven Numbers:** You've heard of "odd" and "even" numbers. But did you know that numbers can also be "threeven"? Actually, threeven's not a real word, but when did that ever stop a mathematician? We just make up our own meaning and see where it leads us.

What do you think "threeven" should mean? Find some threeven numbers using your definition. What patterns do you see? What questions can you ask about your threeven numbers?

What other mathematical words would you like to make up and define?

☐ **311. Annie Perkins's Math Art Challenge:** Go to arbitrarilyclose.com/home and find a project you like. Play with it. Make your own math art. What kinds of math can you see in your art? What questions can you ask?

Take a picture of your art and share it online with the hashtag #MathArtChallenge.

☐ **312. Lifelong Learning:** Create your own list of math research questions. What interesting things would you like to know more about? You don't have to answer your questions, just wonder about them. Learning to ask good questions is an important part of math.

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