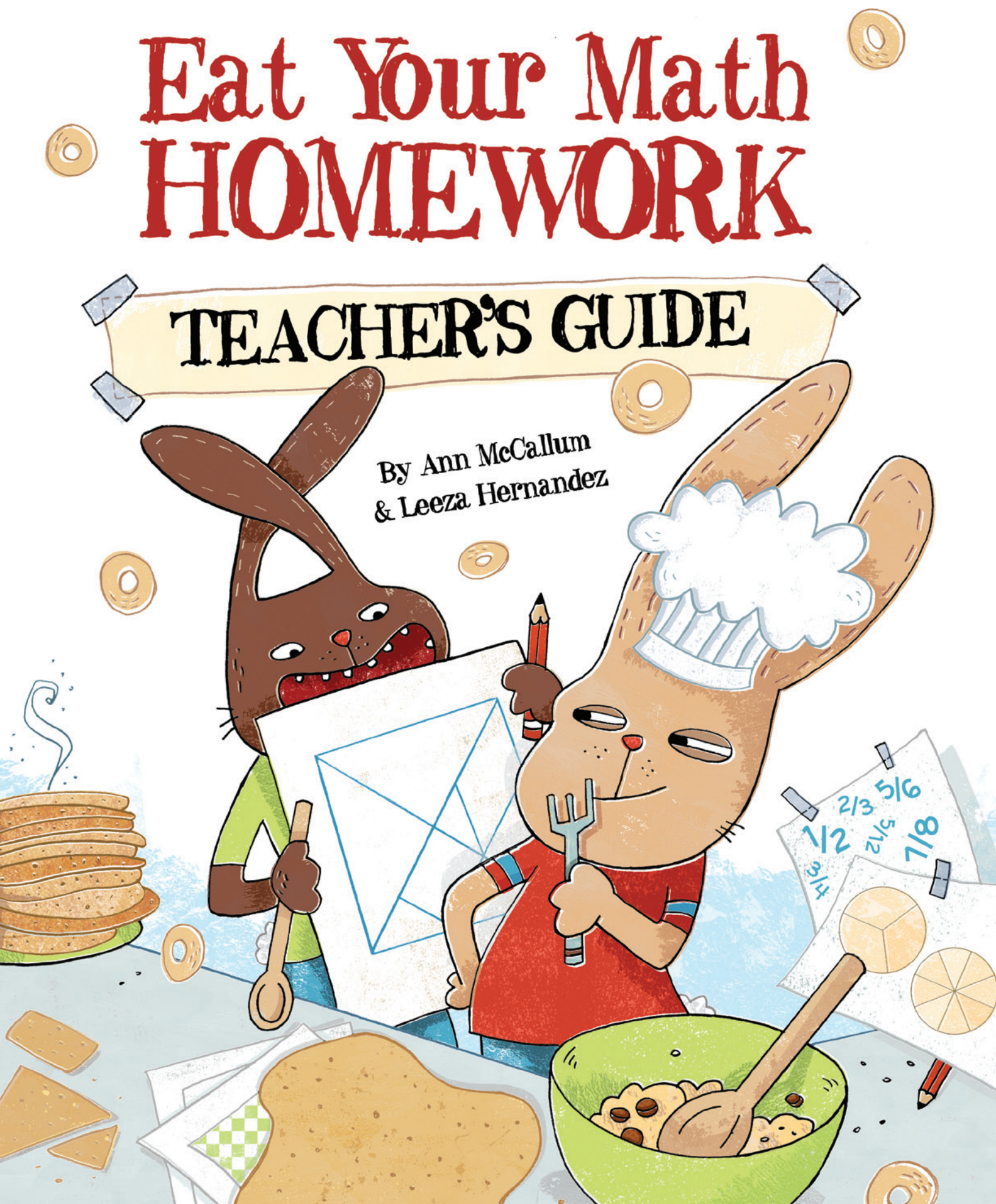


Eat Your Math HOMIEWORK

TEACHER'S GUIDE

By Ann McCallum
& Leeza Hernandez



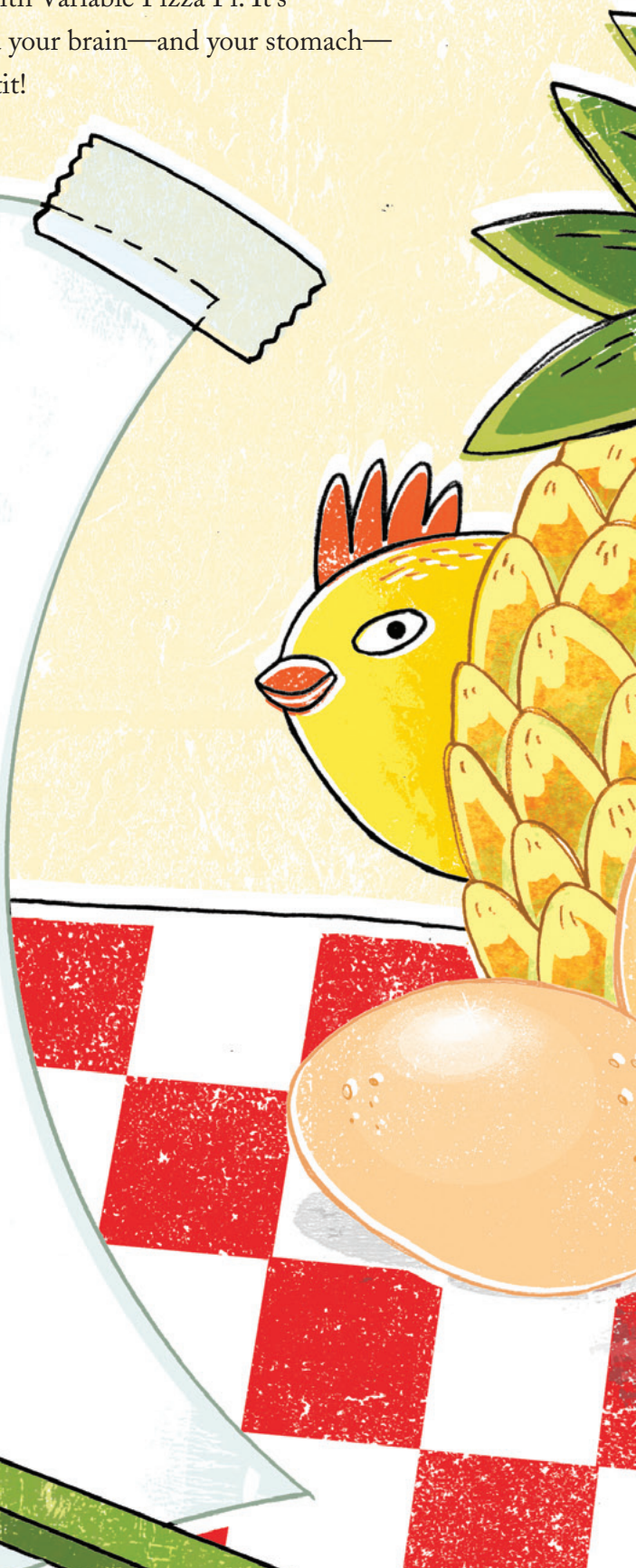
Welcome Mathemagicians!

Put on your apron—and your thinking cap. This unique collection of yummy recipes and fun math facts will make your classroom oh-so-delicious. Tempt your taste buds as you explore patterns in nature and chomp down on Fibonacci Snack Sticks. Check out the art of M.C. Escher while trying out tessellations. Amaze your classmates with Variable Pizza Pi. It's homework (and class work) like you've never done before. Feed your brain—and your stomach—as you learn how to “Eat Your Math Homework” ... Bon Appetit!

Ann McCallum & Leeza Hernandez

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About the Author: Ann McCallum

Ann McCallum is the award-winning author of several children's books, including two math fairytales. She is also a high school teacher in Maryland, though she started her teaching career in a one-room schoolhouse in northern Canada (Where she once crossed paths with the neighborhood bear). She also taught in the United Arab Emirates where she went sand-skiing in the dunes behind her school. Ann enjoys reading, traveling, writing, and walking through leaves. Her family keeps her happy and busy.

Visit www.annmccallumbooks.com

About the Illustrator: Leeza Hernandez

Leeza Hernandez is an illustrator, author and graphic designer whose art has been featured in books, magazines, and newspapers. She is the 2011 winner of the Society of Children's Book Writers and Illustrators (SCBWI) Art Showcase and the 2009 recipient of the SCBWI Tomie de Paola Portfolio Award. She lives in Central New Jersey, with her family, a fluffy cat, two chubby goldfish, and a cheeky wild rabbit or two.

Visit www.leezaworks.com

Team Visit!

Have Ann and Leeza come to your school.* The daring math duo offers a dynamic school presentation, including a behind-the-scenes-look at how the book was made and some lively audience activities!

Visit www.eatyourmathhomework.com

* Subject to author and illustrator availability.





YUMMY PRAISE FOR:

“Eat Your Math Homework: Recipes For Hungry Minds”



Book Links 2011 Lasting Connection
for Mathematics



“... the activities will make lively additions to classroom units, they are also well suited to home use. Witty and smart, this unusually upbeat math book offers edible rewards for learning.”

–Booklist



“McCallum and Illustrator Leeza Hernandez have found a clever way to turn math drudgery into deliciousness with their brand new book.”

–PBS Parent



“Getting kids to enjoy math is not always a piece of cake. But a local teacher and mom is trying to change that, one bite at a time.”

–WUSA Channel 9



“A yummy way to get parents and kids to more deeply understand math...and spend some time together in the kitchen.”

–Kirkus Reviews



“When I read this collaboration between Ann McCallum and Leeza Hernandez I realized that what I had here was a book with a million uses.”

–Library School Journal (A Fuse #8 Production)

For more fab reviews, visit: www.eatyourmathhomework.com

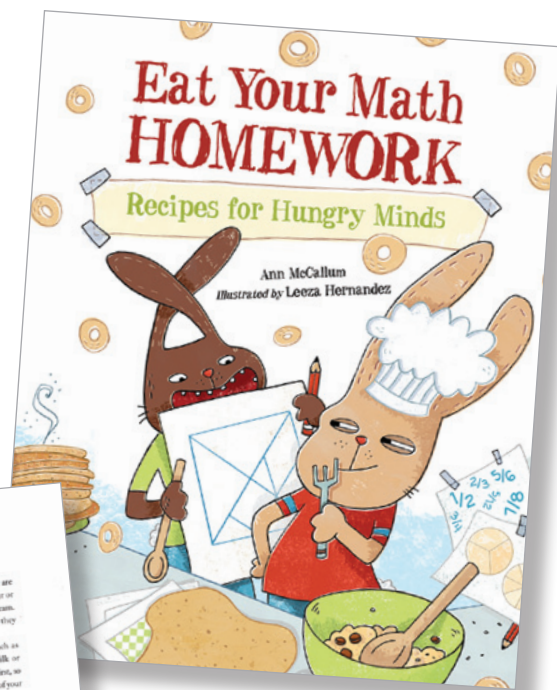
Getting Started

Pre-Reading

1. Ask students how they use math in everyday activities. For example, how do students use math to:
 - a) get home?
 - b) purchase food at the grocery store?
 - c) figure out what time to go to bed?
2. Ask students if they've ever had a chance to eat math. Brainstorm how math and food are related. For example:
 - a) when you cut a pizza into eighths,
 - b) double a recipe, or
 - c) pour eight ounces of milk.

Introduce the Book

1. Share one section of the book at a time. Read the background information and have students discuss the topic. Use or adapt the activities below for an interrelated curriculum approach to learning. Don't forget to challenge students with the math 'appetizers' in each section.





Fibonacci Snack Sticks

What, or more accurately, who was Fibonacci?
Find out about the famous Leonardo Fibonacci and encourage students to work in a math journal, or use the chart below to record their findings. What did they discover? Create groups to work as a team when researching, then discuss.

Name:	Date:
What do you already know about Fibonacci?	
What questions do you have about Fibonacci?	
I discovered the following about Fibonacci:	
Examples of Fibonacci in nature are:	
Other observations:	

Solving the Secret of Sequences

Arithmetic Sequence

Introduce various number sequences. For example, an arithmetic sequence continues when you add the same value each time:

1, 5, 9, 13, 17...

(add 4 to each term to get the next term)

Challenge. Continue the pattern for each of the following:

a) 3, 6, 9, 12, 15, ___ ___ ___

b) 2, 7, 12, 17, ___ ___ ___

Geometric Sequence (harder)

Each term in a geometric sequence is made by multiplying a certain value. For example, in this geometric sequence, you must multiply the previous term by 3 to get the next value in the sequence.

2, 6, 18, 54...

Challenge. Can you find the next term for each of these geometric sequences?

a) 3, 12, 48, ___

b) 5, 10, 20, ___

Fibonacci Sequence

You can easily adapt the recipe from this book to make the Fibonacci Snack Sticks simple to construct in the classroom. If providing chunks of fresh fruit isn't practical, use colored miniature marshmallows or other easy-to-manage edibles such as raisins, gummy bears, grapes, or dried pineapple and other fruit. Demonstrate how children can skewer the items on kebab sticks (purchased inexpensively from grocery or other stores) to model the Fibonacci sequence. Let children try it on their own. You can also create this exercise using assorted beads and string.

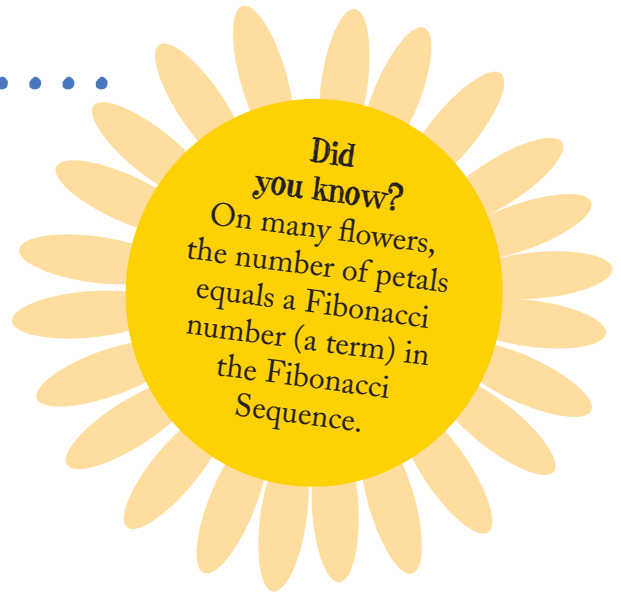
Challenge. To extend the activity, tape several kebob sticks together and continue the pattern. How far can you go before the numbers get too crazy large? Make a prediction first. Will you be able to include five terms (each value in the pattern is called a term) in the Fibonacci Sequence, eight terms, twenty terms, more? Put together the sticks to find out!



Fibonacci Snack Sticks

And how about those flowers?

Bring in samples of flowers (if possible) or use a variety of flower pictures that clearly show the number of petals per flower in each image. Have children count the number of petals. Encourage students to record their findings in a math journal or on the chart below. Draw a picture of the flower. What do you notice about the number of petals?



Name: _____		Date: _____	
Name/picture of Flower #4		Number of Petals _____	A Fibonacci Number? <input type="checkbox"/> Yes <input type="checkbox"/> No
Name/picture of Flower #4		Number of Petals _____	A Fibonacci Number? <input type="checkbox"/> Yes <input type="checkbox"/> No
Name/picture of Flower #4		Number of Petals _____	A Fibonacci Number? <input type="checkbox"/> Yes <input type="checkbox"/> No
Name/picture of Flower #4		Number of Petals _____	A Fibonacci Number? <input type="checkbox"/> Yes <input type="checkbox"/> No

Vocabulary Log

Keeping track

Set up a log for the math terminology that appear in each section of “Eat Your Math Homework.” Encourage students to record them in their math journals. Include a definition and example for each word or phrase. You can use the chart below to help you get started.



Name:		Date:	
Word/Phrase	My Definition	Actual Definition	Example
Infinity		Something without limits	The number of stars in the sky equals infinity.
Finite		The specific number of terms in a set.	The amount of water that fits in a glass is finite.
Term		A number in an expression or sequence.	1, 1, 2, 3, 5, 8 ...
Consecutive		In order.	For example: 5, 7, and 9 are consecutive odd numbers.

Probability Trail Mix

Introduction

Introduce the concept of probability by having children predict how likely certain events are. Use gestures to encourage a group response:

- a) both arms in the air for 'Yes, absolutely!'
- b) hands on shoulders for 'Maybe'
- c) arms by your side for 'No way!'

Possible Probability Questions:

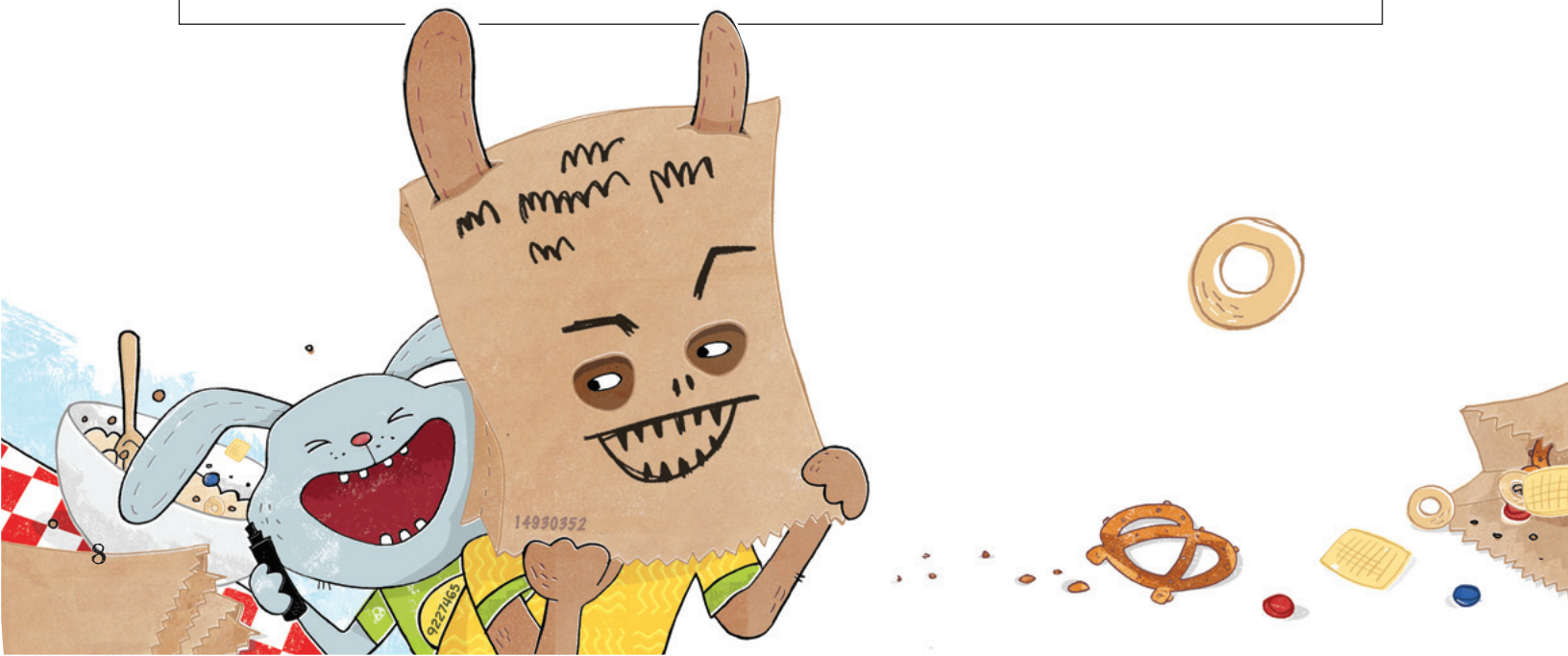
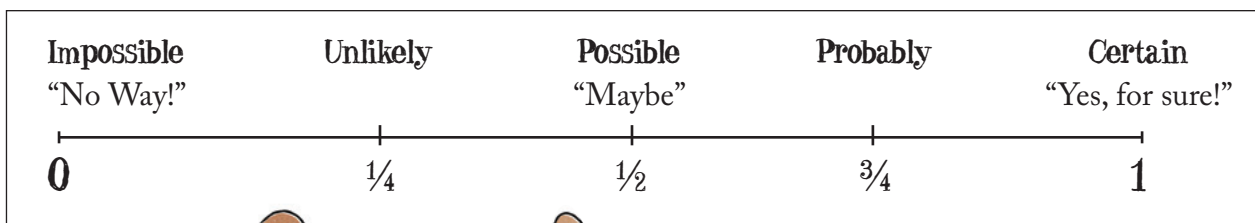
- a) Will it rain tomorrow?
- b) Will you eat pizza for dinner tonight?
- c) Will your teacher assign homework this week?
- d) Is your teacher an alien?

Read the Probability trail Mix section of "Eat Your Math Homework" and discuss. Have cups of items to estimate for the 'Math Appetizer.'

Pleasing Probability

1. Probability is all about predicting. You can use math to help make your predictions more accurate. Refer to the chart below for a numerical scale of probability.

Ask the same probability questions used in the introduction of this section, but have students give a numerical answer this time.
Challenge: Have students answer using fractions and decimals to describe the answers.





Pleasing Probability

2. Introduce theoretical probability and experimental probability. Theoretical (thinking) probability is a numerical prediction of what *will* occur.

Experimental probability is what *actually* happens. Are these two values always the same? Demonstrate this idea by rolling a number cube. First, have children predict what number will be rolled. Then, roll the cube. What happened?

Extension: Use the number cube to explore further. If there are six faces with the numbers one to six on each face, what is the theoretical probability of rolling a five? There is a one out of six chance of getting a five, so the theoretical probability of rolling a five is $\frac{1}{6}$.

What is the theoretical probability of rolling an even number? (There are three even numbers, so the theoretical probability is $\frac{3}{6}$ —and this can be reduced to $\frac{1}{2}$, or a one out of two chance of getting an even number.)

Try rolling the cube six times. Did the predictions match the actual results? If not, why? Try the experiment twelve times, or even 60 times (six groups might do this ten times each). Now what happened?

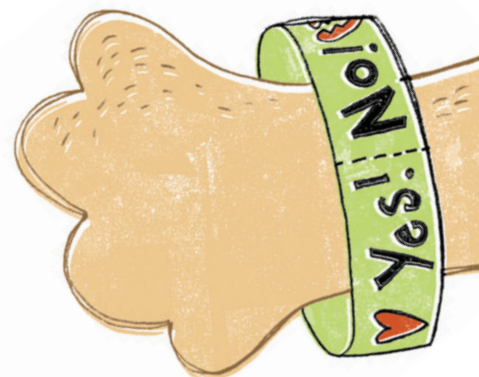
3. Use Probability Trail Mix to explore probability further. Prepare the trail mix ahead of time. Various ingredients can be substituted as desired instead of the ones listed in the book.

For more math exploration use the student activity sheets on the following pages and remember, **Eat More Math!**

Student Activity Sheet Probably Wrist Band

1. Lay out the strip of paper flat. Starting at the left end, draw or write something that is impossible.
2. Next, draw or write something that you think is unlikely.
3. Continue with something that is possible, probable, and then certain.
4. Bring the two ends of the wrist band together and glue, or tape.

Or, write the categories “No way!,” “Maybe,” and “Yes!”



Student Activity Sheet

Is probability fair? Probably!

Take this quick survey to learn about probability:



Read the question and then check the answer:	No way!	Um, maybe.	Yes, for sure!
Will you see a rabbit wearing red pajamas today?			
Will you win a million bucks?			
Will you get to read a really good book?			

Probability is all about predicting. You can use math to help make your predictions be more accurate. Test your probability problem-solving skills with this activity:

1. Take a sample of ten items of the Probability Trail Mix and put them into a brown bag.
2. Predict the future! If you reach into the bag ten times and pick out the first thing you touch, how many times do you think you'll get each item?
 - What is the likelihood of drawing more goldfish crackers than M&Ms?
 - What are the chances that you'll never draw a pretzel?
3. Now it's time to experiment. Without looking, pick out the first thing you touch. What is it? Record it on the chart below. Put it back and try again. Continue until you've drawn ten times. How did your predictions (theoretical probability) compare to what actually happened (experimental probability)?

ITEM	Goldfish	M&Ms	Cereal	Pretzels	Candies
Picked how many times?					

Name:

Date:

Vocabulary Log

Keeping track

Set up a probability log for the math terminology that appear in each section of "Eat Your Math Homework." Encourage students to record them in their math journals. Include a definition and example for each word or phrase. You can use the chart below to help you get started.




Name:		Date:	
Word/Phrase	My Definition	Actual Definition	Example
Probability		The likelihood of something happening.	It is unlikely to rain today.
Prediction		A guess about the future.	When I kick the ball, it will go in the goal.
Theoretical Probability		The number of times the desired outcome occurs over the number of possible outcomes.	When I throw this dice ten times, I will get six fours.
Experimental Probability		The number of times the desired outcome occurs over the number of trials in an actual experiment.	I threw this dice ten times and I got two fours.
Percent (%)		A portion of something out of 100.	6% means six out of 100. $\frac{1}{2}$ off = 50% off

Student Activity Sheet


Math scavenger hunt. Ready, set, go!

Find the items listed in the chart below.

EASY

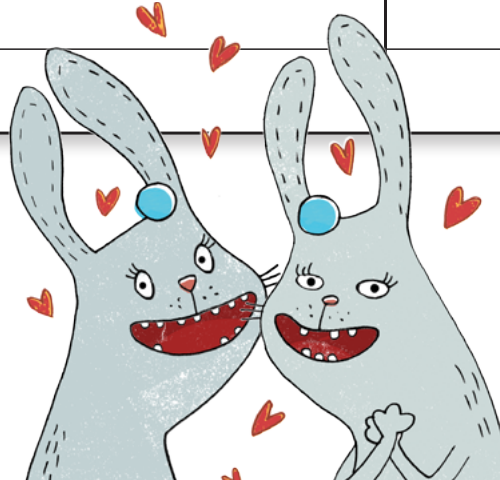
ITEM	Check 
A blade of grass as long as your thumb.	
Two rocks that weigh the same amount.	
Something that is a rectangle.	
Half of something $\frac{1}{2}$	

HARDER

ITEM	Check 
A cylinder.	
Something that makes a pattern.	
One quarter of something $\frac{1}{4}$	

Name:

Date:

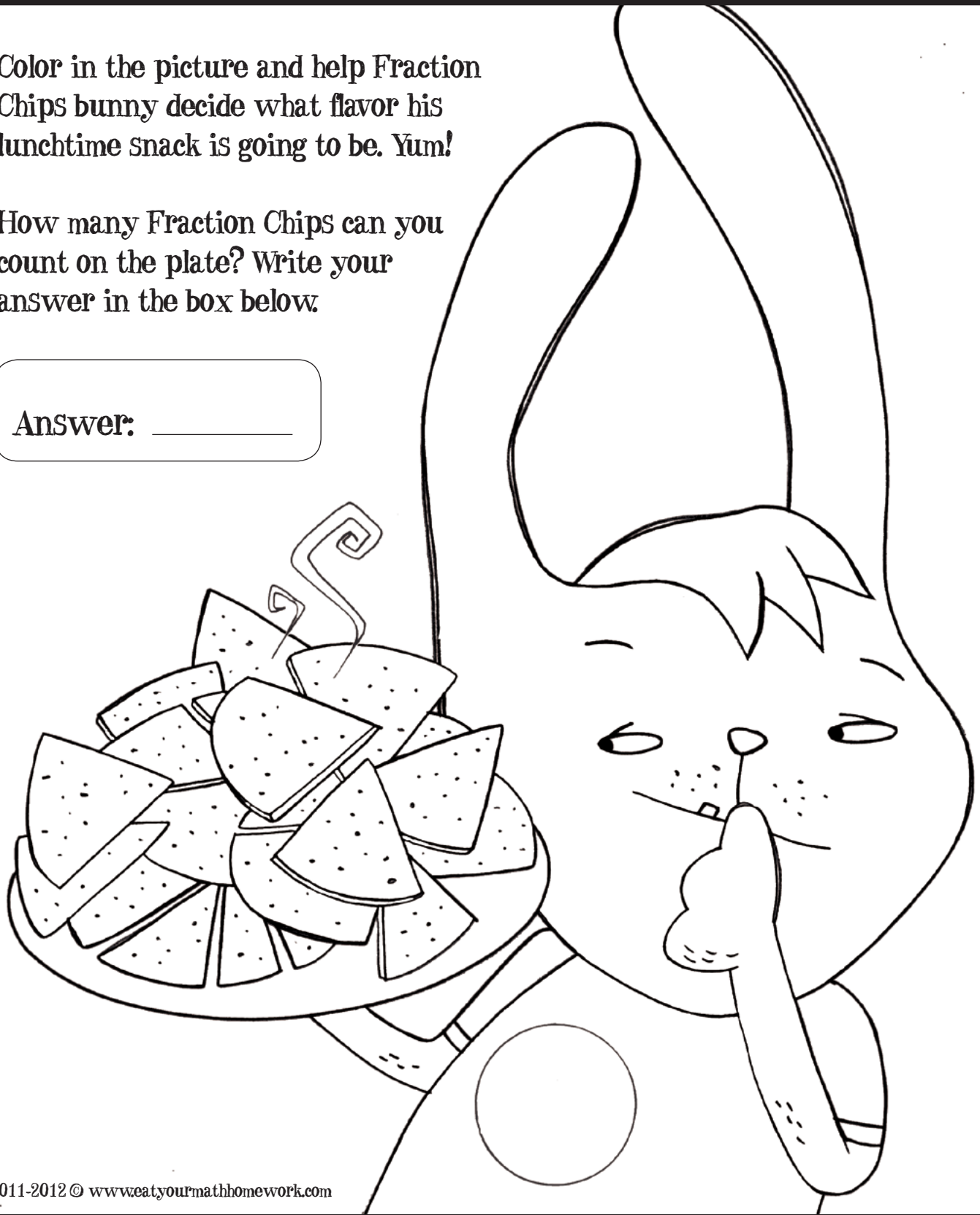


Eat Your Math Homework: Coloring Activity

Color in the picture and help Fraction Chips bunny decide what flavor his lunchtime snack is going to be. Yum!

How many Fraction Chips can you count on the plate? Write your answer in the box below.

Answer: _____





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