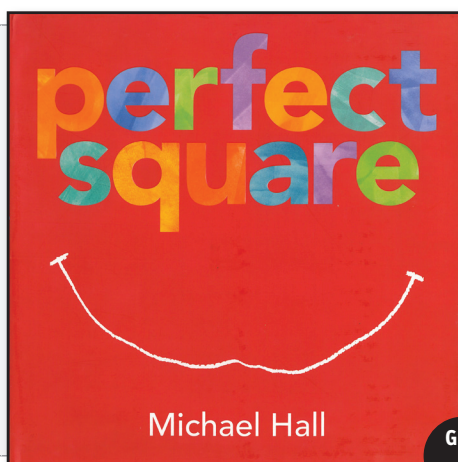
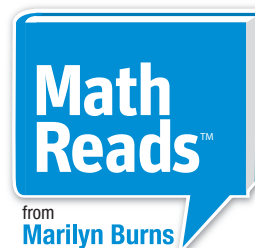


Grade K

Perfect Square

Written and Illustrated by: **Michael Hall**

SCHOLASTIC



GRL
J

TOPICS

Counting

Shapes

The beautiful illustrations in this book take children on a journey through the days of the week as a square is transformed into different places and things. Children learn that a square has equal sides and matching corners, the perfect beginning for a journey of learning about two-dimensional shapes. The book is an excellent springboard for comparing the attributes of shapes and introducing geometric vocabulary.

Standards for Mathematical Practice

- Model with mathematics.
- Look for and make use of structure.

Standards for Mathematical Content

- Counting & Cardinality
- Geometry

Objectives

- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.
- Count to tell the number of objects.

Getting Started

Before introducing the book, cut a piece of string equal in length to the height or width of the book (it's a square). Also have a 5-by-8-inch index card available.

Show the cover and read the title aloud. Explain that the cover of the book is a square because it has four sides that are equal. Use the piece of string to verify. Say: *A square also has four matching corners.* Hold a corner of the index card to each corner of the book to show that they match. Read the book and then choose one or more of the following lesson ideas to do with the class.

LESSON IDEAS

Talk About a Square

- Before the lesson, cut different size squares from different colors of construction paper. Make sure you have many sizes and colors.
- Post a large piece of chart paper. Have children come up, one by one, and give them a square with a rolled-up piece of tape on the back to attach it to the chart.
- When all children have placed a square, ask: *What do you know about squares?* If no squares are turned at an angle, rotate a few so their sides are not parallel to the sides of the chart paper. Talk about the attributes of a square and record the characteristics on the chart paper.

4 equal sides 4 equal corners or angles

CONTINUE

Draw Perfect Shapes

- To prepare, you need a can of shaving foam and a supply of damp paper towels. Explain to the class that they will be drawing shapes on their desks with shaving foam. (Shaving foam is surprisingly easy to work with and leaves the desk clean.) Say: *When I put some shaving foam on your desk, smooth it out with one hand so it covers your desk. Then clean your hand.* Model this with a damp paper towel.
- Give each child a damp paper towel and put a baseball-sized squirt of shaving foam on each desk. Explain: *Now draw a square in the shaving foam with one finger. Whenever you come to a corner, you must lift your finger from the desk before drawing the next line.*
- After everyone has drawn a square, ask how many times they had to lift their fingers. Then have them “erase” their squares by smoothing out the shaving foam with one hand.
- Next, have children draw a circle. Ask: *Did you ever lift your finger?* Have them “erase” the circle and draw a triangle with a point up. Talk about the number of times they had to lift their fingers, and how many sides and corners the triangle has. Repeat for a triangle with a point down. Explain: *You have still drawn a triangle because it has three sides and three corners. It doesn't matter which way the corners point.*
- Continue with a rectangle. Tell the children that a square is also a rectangle but a special kind because it has four equal sides. Finally, have children draw a hexagon. Ask the children how many times they had to lift their fingers and how many sides make the shape.
- Ask the children to clean up.

Find Triangles Inside the Perfect Square

- Revisit the book and show the page about Monday. Ask children to look at the picture of the square that is cut into pieces and poked full of holes. Identify the holes as circles and ask if they can see any triangles. Turn the page to show the picture of the fountain and count the triangles.
- Show the picture next to the page about Thursday. Ask children to count the triangles with you. Turn the page to show the bridge. Count the triangles and ask children to describe how the triangles are arranged.

Break Squares Apart

- To prepare, cut 6-inch squares from different colors of construction paper. Give each child a square and a 12-by-18-inch piece of white construction paper. Have glue sticks available.
- Page through the book and have the children look at the different ways the author cut apart and reassembled the squares. Ask children to cut their squares apart to make a picture and paste the pieces to the construction paper. Explain that they must use every part of the square.
- Let the glue dry overnight. Then help children count and label the shapes in their pictures. Assemble the pictures into a class book.

SUPPORTING INSTRUCTION

Although “quadrilateral” is not a required vocabulary word for kindergarten, it is a word they will need to be familiar with later on. After children have identified the triangles in the fountain on the page about Monday, ask them to describe the remaining shapes. Ask: *How are these shapes like squares and rectangles? How are they different?* Summarize by saying: *Any shape that has four sides is a quadrilateral. Since squares and rectangles have four sides they are also quadrilaterals. A triangle is not a quadrilateral. Why? Is a hexagon a quadrilateral?*

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
circle	<i>círculo</i>
hexagon	<i>hexágono</i>
quadrilateral	<i>cuadrilátero</i>
rectangle	<i>rectángulo</i>
square	<i>cuadrado</i>
triangle	<i>triángulo</i>

Context Vocabulary

ENGLISH	SPANISH*
perfect	<i>perfecto</i>
shattered	<i>agotado</i>



HOME CONNECTION

Let families know their children are learning about shapes in the classroom. Ask them to help their child find squares, circles, triangles, rectangles, and hexagons at home.

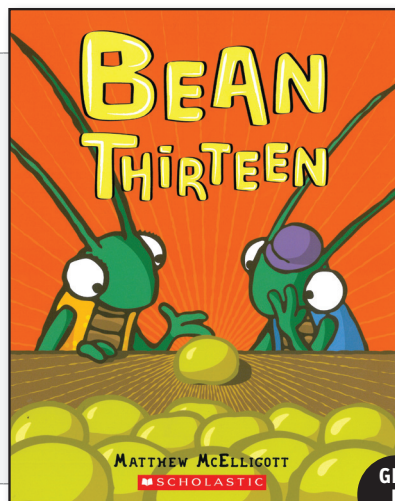
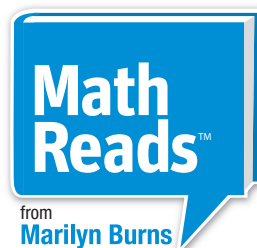
*Pointing out Spanish cognates will help children make meaning-based connections.

Grade 1

Bean Thirteen

Written and Illustrated by: **Matthew McElligott**

SCHOLASTIC



GRL
J

TOPICS

Odd & Even Numbers

Equations

In this wonderfully illustrated story, readers will join Ralph and Flora, two hardworking grasshoppers, as they harvest beans for dinner. Ralph becomes deeply concerned that they have picked an unlucky number of beans and doesn't want to eat the 13th bean. Flora works to solve the problem by inviting a delightful array of guests to dinner. This book is an excellent springboard for investigating odd and even numbers.

Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Attend to precision.

Standards for Mathematical Content

- Operations & Algebraic Thinking

Objectives

- Represent and solve problems involving addition.
- Work with addition equations.

Getting Started

Show the cover and read the title aloud. Say: *The main characters in this story are two grasshoppers named Ralph and Flora. They are trying to solve a problem involving the 13 beans they've collected.* Tell the children that you'll read the story first, and then talk with them about the problem with the 13 beans. Read the book and then use the following lesson ideas in the order they appear.

LESSON IDEAS

Act Out the Story Using Counters

- Give each pair of children 13 counters. Reread the book, stopping after Ralph and Flora put the 13 beans in two piles of 6 beans with 1 bean left over. Ask the children to show this with their counters. Write on the board: $13 = 6 + 6 + 1$. Relate the equation to their arrangements of counters.
- Continue reading until Ralph and Flora put the beans into three piles with 4 beans in each and 1 bean left over. Ask the children to show this with their counters. Write on the board: $13 = 4 + 4 + 4 + 1$. Relate the equation to their arrangements of counters.
- Continue through the book in this way—with four piles of 3 beans and 1 bean left over on the next page, then five piles of 2 with 3 left over, then six piles of 2 with 1 left over. Then have children share their ideas about what happened to bean 13.

CONTINUE

Explore Odd and Even Numbers

- Open the book to the page where Ralph and Flora shared the beans into two piles and there was one extra. Say: *Thirteen is an odd number because when you put 13 objects into two equal groups, one is left over.*
- Have children count out 10 of their counters and put them into two equal groups to see if there is an extra. Explain: *Ten is an even number because when you put 10 objects into two equal groups, there isn't an extra left over.* On the board, label two columns and record 13 and 10 as shown below.

<u>Odd</u>	<u>Even</u>
13	10

- Tell the children that they will work with a partner to explore other odd and even numbers with their counters. Give each pair a piece of paper and model for them how to fold it lengthwise. Say: *At the top of your paper, write "Odd" on the left side and "Even" on the right side. Then write 13 in the Odd column and 10 in the Even column, just as I did on the board.*
- Have the children explore other numbers of counters in the same way. When they are done, ask them to report which numbers were odd and which were even.

Relate Odd and Even Numbers to Equations

- Each pair of children need 13 counters and their papers with odd and even numbers. List the numbers from 1 to 13 on the board. Next to 13, write an equation: $13 = 6 + 6 + 1$. Revisit the illustration that shows Ralph and Flora putting 13 beans into two piles.
- Ask: *Is 7 odd or even? (odd) If you put 7 in two equal groups, how many will there be in each? (3) Is there one left over? (yes)* Write an equation next to the 7 on your list: $7 = 3 + 3 + 1$. Ask: *Is 6 odd or even? (even) If you put 6 in two equal groups, how many will there be in each? (3) Is there one left over? (no)* Write an equation next to the 6 on your list: $6 = 3 + 3$.
- Have pairs continue the exploration. Tell them to list the numbers from 1 to 13 and write equations for each. When their lists are complete, point out the pattern of numbers with an extra and those without.

Practice "Whisper Counting"

- Before the lesson, count out an odd number of counters. Show the counters to the children and have them count aloud with you and tell whether the amount is odd or even.
- Then count them again to demonstrate "whisper counting." Move counters into two groups as you count them. Whisper: *One*; say: *Two*; whisper: *Three*; say: *Four*; and so on. Tell the children that the numbers that you are whispering are the odd numbers. Point out that you whispered the last number, so the number you have is odd. Show the two equal groups and the extra odd one.
- Ask the children to practice whisper counting to test if numbers are odd or even. Demonstrate taking a handful of counters and shaking gently to get rid of the extras, and then whisper counting.

SUPPORTING INSTRUCTION

Give some counters and two small paper cups to children who have difficulty keeping track. Explain: *Count your counters. Then put the same number of counters in each cup. If you have an extra counter, the number is odd. If you don't have an extra, the number is even.* Have children do this with different numbers of counters.

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
addition	adición
equation	ecuación
even	par
odd	impar
pattern	patrón

Context Vocabulary

ENGLISH	SPANISH*
fuss	jaleo
shrugged	se encogió de hombros

HOME CONNECTION

Have children show someone at home how to "whisper count" to decide if a number is odd or even.

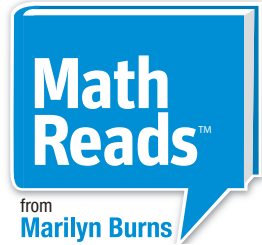
*Pointing out Spanish cognates will help children make meaning-based connections.

Grade 1

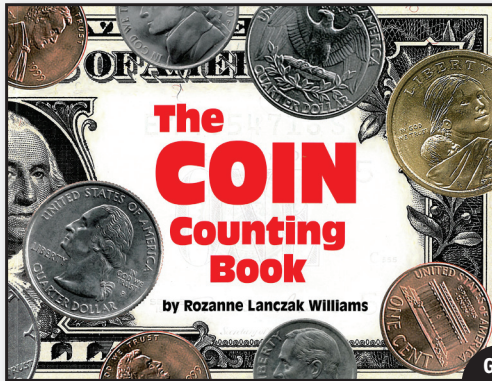
The Coin Counting Book

Written by: **Rozanne Lanczak Williams**

SCHOLASTIC



TOPICS	
Money	Equations



Children's eyes light up when they see the realistic images of coins shining like treasure on the pages of this book. Pennies, nickels, dimes, quarters, and half-dollars are identified and then combined in many ways to make one dollar. The rhyming text engages young readers as they learn about the use of money symbols, addition, equivalence, and place value.

Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Attend to precision.

Standards for Mathematical Content

- Operations & Algebraic Thinking
- Number & Operations in Base Ten

Objectives

- Work with addition equations.
- Understand place value.

Getting Started

Show the front and back cover and read the title aloud. Ask children to think of places where they are most likely to find coins, such as purses, pockets, and piggy banks. Read the book and then choose one or more of the following lesson ideas to do with the class.

LESSON IDEAS

Create a Chart About Coins

- To prepare, glue a large image of the coins shown below to a piece of chart paper divided into fourths. Label the chart as shown.



- Post the chart then ask children for information about the coins—their worth, how to combine them to equal the worth of another, and so on. Record their ideas in the correct section. Then revisit the book to add more ideas to the chart.

CONTINUE


Compare Quantities

- Show five pennies and one nickel on an interactive whiteboard or document camera. If you prefer, cut out images of the coins and post them to the chalkboard instead. Label them as shown below. Ask: *Are both sides of the equation equal? (yes) How do you know? (The value of five pennies is the same as the value of one nickel.)*



$$1\text{¢} + 1\text{¢} + 1\text{¢} + 1\text{¢} + 1\text{¢} = 5\text{¢}$$

- Repeat with another equation where the two sides are not equal. Ask: *Are both sides of the equation equal? (no) How do you know? (The value of a nickel equals five pennies, and there are only two pennies.)* Cross out the equal sign and reread the equation: *One cent plus one cent is not equal to five cents. One penny plus one penny is not equal to one nickel.*



$$1\text{¢} + 1\text{¢} \neq 5\text{¢}$$

- Repeat to compare other amounts. Write the amounts and show with coins. For each, ask: *Should I write the equal sign or the not equal sign?*

Count Dimes and Pennies

- Assign partners and then give each pair a sandwich bag with six dimes and six pennies. Ask them to take out two dimes and three pennies. Demonstrate counting on to figure out the worth of the coins. Explain: *It helps to start by counting the coins that are worth more.*
- As you count, point to the coins. Say: *I have 10, 20, 21, 22, 23 cents.* Write **23¢** on the board. Point to 23 and relate the 2 to the two dimes or the tens place, and the 3 to the three pennies or the ones place.
- Ask partners to take turns counting out two dimes and three pennies. Then have them record the amount on a piece of paper. Ask pairs to repeat for other combinations of dimes and pennies.

Solve Problems

- For each child, prepare a bag with real or play coins up to 50¢ in value. Make a duplicate of each bag so that partners have identical collections.
- Give each pair of children a set of matched bags. Explain: *You and your partner both have the same coins in your bags. First, count the money in only one of the bags. It's important that you both do it so you can compare and make sure each bag has the same amount. Then, make a prediction about the combined value of both of your bags. Next, figure out how much money there is in both bags.*
- Repeat on other days, giving pairs different collections of coins.

SUPPORTING INSTRUCTION

If children struggle with coin-counting activities, limit the number of coins for that particular activity.

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
dime	moneda de diez centavos
dollar	dólar
equal	igual
nickel	moneda de cinco centavos
penny	moneda de un centavo
quarter	moneda de veinticinco centavos

Context Vocabulary

ENGLISH	SPANISH*
sense	sentido
shiny	brillante
trade	intercambiar

HOME CONNECTION

Send home a letter explaining to families that their child has been counting coins at school. Ask them to count the coins in their pockets or purses with their child.

*Pointing out Spanish cognates will help children make meaning-based connections.

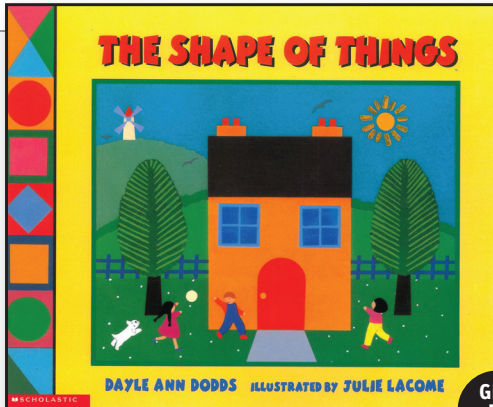
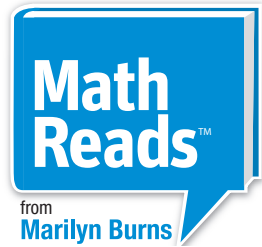
Grade 1

The Shape of Things

Written by: **Dayle Ann Dodds**

Illustrated by: **Julie Lacome**

SCHOLASTIC



GRL
I

TOPICS

Shapes

Patterns

This delightful rhyming book helps children see how a few simple shapes can make up many things in the world. Borders of repeating patterns created with squares, triangles, ovals, and circles surround compelling scenes that engage readers with detail, color, and geometric shapes. The bold and interesting illustrations invite conversations about pattern, symmetry, and shape identification.

Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Look for and make use of structure.

Standards for Mathematical Content

- Geometry

Objectives

- Reason with shapes and their attributes.
- Identify symmetry.

Getting Started

Before introducing the book, engage children with some repeating patterns. Tell them that you'll begin a pattern and they should join in when they figure it out. Create a simple pattern that children can hear, see, and mimic, such as *clap, hands on knees, clap, hands on knees*. Reinforce the idea that these are repeating patterns because the same things happen again and again. Say: *Some patterns repeat, which makes them especially fun since everyone can join in once they can predict what's going to happen next.*

Show the cover and read the title aloud. Tell the children to look for repeating shape patterns around the pictures as you read. Read the book, stopping to discuss the shapes in the pictures and borders. Then choose one or more of the following lesson ideas to do with the class.

LESSON IDEAS

Explore Repeating Patterns

- Reread the book and bring children's attention to the repeating patterns of shapes in the borders around each page. Ask them to think of different ways to describe the same pattern. For example, a child might see the border pattern on the first pages as green square, yellow square, green square, yellow square. Another child might describe it as big square, little square, big square, little square.
- As you explore patterns on each page, invite children to help you count the number of different shapes in the patterns.

CONTINUE

Make Place Mats

- Give each child a piece of 9-by-12-inch construction paper to make a place mat with a border. Explain that they are to use shapes to create a repeating pattern around the edges. As children brainstorm ideas for their patterns, you may want to prompt them with the following questions.
 - ▶ Which shapes will you use in your pattern?
 - ▶ How many shapes will you draw on each side of your paper?
 - ▶ How many will you draw of each shape?
- Ask children to plan their patterns by drawing first in pencil. Then they may color the shapes.

Explore Symmetry

- Prior to introducing the activity, use construction paper to cut out circles, ovals, triangles, rectangles, and squares. Then give each child one shape.
- Model the activity for the class. Take one of the shapes and fold it exactly in half. Open the shape and show the class the line of symmetry. Write **symmetry** on the board.
- Say: *If a shape has two halves that match exactly, then the shape has symmetry.* After opening and closing the shape, ask: *What would happen if I cut the shape on the line of symmetry?* (There would be two halves of the first shape.) Cut the shape on the line of symmetry.
- Tell the children that they will work with a partner and do the following things.
 - ▶ Fold each shape in half.
 - ▶ Use the line of symmetry to cut the shape into two halves.
 - ▶ Arrange the half shapes on a plain piece of paper to create a picture or design.
 - ▶ Glue the shapes to the plain piece of paper.
 - ▶ Talk with each other about what they notice about the new shape picture.
- When pairs have finished, have them share and discuss their work with another pair of children.

Go on a Shape Scavenger Hunt

- Tell the class that they will be working with a partner to go on a scavenger hunt for shapes in the classroom. Give each child a clipboard or notebook to use when recording observations.
- Have the children draw the shapes that they see and write the names of the places where they see them.
- After the scavenger hunt, gather the children to share what they recorded. Ask: *Which shapes seem to be most common?* Discuss with children why some shapes may appear more often than others.

SUPPORTING INSTRUCTION

Watch as children fold the shapes in half to ensure they fold them so that both halves are the same. Help children who need assistance.

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
circle	círculo
half	mitad
oval	óvalo
predict	predecir
rectangle	rectángulo
repeat	repetir
repeating	repitiendo
square	cuadrado
symmetry	simetría
triangle	triángulo

Context Vocabulary

ENGLISH	SPANISH*
caboose	cabús
seagull	gaviota

HOME CONNECTION

Have children take their place mats home to share with their families. Tell children to look for shapes at home and report back the next day.

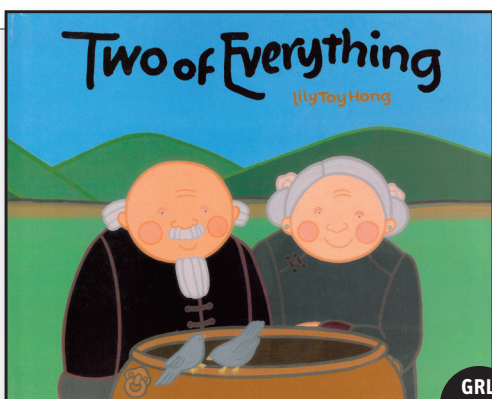
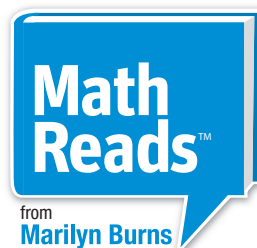
*Pointing out Spanish cognates will help children make meaning-based connections.

Grade 1

Two of Everything

Written and Illustrated by: **Lily Toy Hong**

SCHOLASTIC



GRL
N

TOPICS

Addition & Subtraction

Equations

This Chinese folktale takes place in a simple rural setting. Mr. and Mrs. Haktak are old and very poor, and they only have the food from their garden to eat. But their lives change dramatically when Mr. Haktak unearths an ancient brass pot. It's a good thing he is so fond of Mrs. Haktak, because after she accidentally falls into the pot, she comes back out of the pot with a very special surprise! This book can deepen children's understanding of the concept of doubling.

Standards for Mathematical Practice

- Reason abstractly and quantitatively.
- Attend to precision.
- Look for and make use of structure.

Standards for Mathematical Content

- Operations & Algebraic Thinking
- Number & Operations in Base Ten

Objectives

- Represent and solve problems involving addition.
- Mentally find 10 more than a number.

Getting Started

Show the cover and read the title aloud. Tell the class that this book is based on a folktale. Explain: *A folktale is like a fairy tale. It's a story that people told over and over again before it was ever written down. This folktale comes from China.* Locate China on a map or globe and look at its location in relation to yours. Read the book and then use the following lesson ideas in the order they appear.

LESSON IDEAS

Create Pages for a Class Book

- On a piece of chart paper, write the sentence frame as shown below. Duplicate a copy of the sentence frame for each child, plus a few extras for children who may like another.

I put _____ in the pot and _____ came out of the pot.

- Ask the children to think of things that they might want to put into the pot and how many they would put in. List their ideas on the board along with the number they decided.
- Say: *Choose something to put into the pot, use the doubling rule from the book, and record what comes out.* Model how to complete the sentence frame.

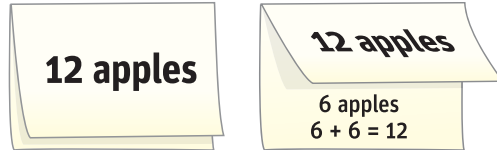
I put 5 jewels in the pot, and 10 jewels came out of the pot.

- Have each child decorate his or her page, then assemble the pages into a class book.

CONTINUE

Write and Present Riddles

- Tell the children that they will work in pairs and write riddles. Demonstrate by folding a piece of paper in half. Write **12 apples** on the outside of the paper. Explain: *This is what came out of the pot.* Lift the flap and, on the bottom half of the inside, write what was put into the pot and an equation. Don't let the children see what you write.



- Hold your paper so it is folded and the children can only see the front of the paper. Ask them to figure out what you put into the pot and the equation you wrote. Then open to reveal what you wrote.
- Give each child a piece of paper and have pairs write riddles. Explain: *Fold your paper in half. Write what came out of the pot on the outside of the paper. On the inside, write what you put into the pot and the equation.* Over the next several days, have pairs present their riddles for others to solve.

Investigate a Magic Pot That Adds 10

- Describe a different magic pot that Mr. Wong found in his village. Say: *When Mr. Wong put one coin into his magic pot, instead of two coins coming out, 11 coins came out! When Mrs. Wong put five potatoes into the pot, instead of 10 potatoes, there were 15 potatoes!*
- Start a chart on the board. List things that were put into the pot, one at a time. For each, have children guess how many came out.

In	Out
1 coin	11 coins
5 potatoes	15 potatoes
20 apples	30 apples
8 meatballs	18 meatballs
25 carrots	35 carrots
30 hats	40 hats

- Once someone guesses the rule (**the magic pot adds 10**), return to the chart and have the children help you write an equation for each entry.

Solve a Problem

- Say: *If you put one coin in, the Add 10 pot is better. But if you put 25 carrots in, the Doubling pot is better. Why?*
- Have pairs talk about which pot they would rather have and why. Then ask them to present their ideas to the rest of the class.

SUPPORTING INSTRUCTION

Provide children with counters to work out doubling solutions that they are unsure about.

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
double	<i>doble</i>
equation	<i>ecuación</i>
half	<i>mitad</i>
twice	<i>dos veces</i>

Context Vocabulary

ENGLISH	SPANISH*
bamboo	<i>bambú</i>
embroidery	<i>bordados</i>
identical	<i>idéntico</i>

HOME CONNECTION

Have children retell the story about the magic pot to a family member. Ask them to make a list of what kinds of things at home they would like to have doubled.

**Pointing out Spanish cognates will help children make meaning-based connections.*

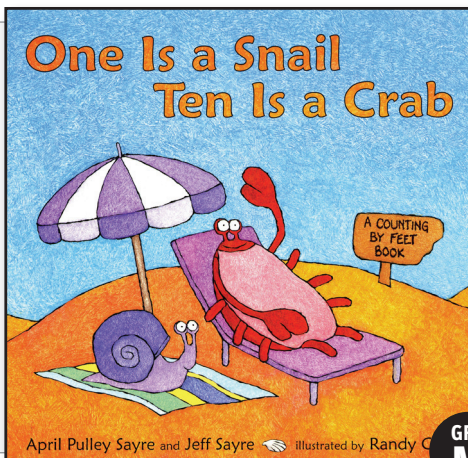
One Is a Snail, Ten Is a Crab

Written by: April Pulley Sayre and Jeff Sayre
Illustrated by Randy Cecil

SCHOLASTIC

Math
Reads™

from
Marilyn Burns



April Pulley Sayre and Jeff Sayre illustrated by Randy Cecil

GRL
M

TOPICS

Addition

Place Value

This charming book counts by groups of feet—1 is a snail, 2 is a person, 3 is a person and a snail, and so on. After showing that 10 is a crab, the counting continues by multiples of 10 up to 100. Children delight in the humorous illustrations and predicting how numbers are represented. The book is ideal for building understanding of place value and representing numerical relationships with equations. Later in the year, you can revisit the book when introducing multiplication as equal groups.

Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Attend to precision.

Standards for Mathematical Content

- Operations & Algebraic Thinking
- Numbers & Operations in Base Ten

Objectives

- Represent and solve problems involving addition.
- Add within 100.
- Understand place value.

Getting Started

Before reading, show the book cover and ask the children, *What do you think the title means?* Point out the sign, “A Counting by Feet Book.” Ask them to predict what the illustrator could draw to show something on the beach that has 2 feet. (Possibilities: a person, a bird, two snails.) *To show 3 feet?* (Possibilities: three snails, one bird and one snail.) *What about 4 feet?* (Possibilities: a dog, a cat, a horse, two people, one person and one bird, four snails.) Ask, *How far do you think the author is going to count?* After the students give their ideas, tell them, *Let’s read the book and find out!* Read aloud the text.

LESSON IDEAS

Write Equations to Represent 8

Return to the page with “8 is a spider” on it and show it to the children. Ask them for other ways the illustrator could show 8 feet. Record their ideas as equations in two ways, first with words and then adding numbers:

$$8 = 4 \text{ people}$$

$$8 = 1 \text{ insect} + 1 \text{ person}$$

$$8 = 1 \text{ dog} + 2 \text{ people}$$

$$8 = 2 + 2 + 2 + 2$$

$$8 = 6 + 2$$

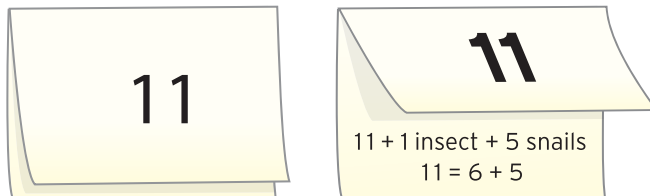
$$8 = 4 + 2 + 2$$

Repeat with 10 feet, continuing to write equations.

CONTINUE

Introduce Riddles

Tell the children that they will each write a Counting Feet riddle. Demonstrate by folding a piece of paper in half. Write the number 11 on the outside. Lift the flap and, on the bottom half of the inside, write two equations to show 11 feet, one with words and one underneath it with numbers. Don't let the children see what you write, but tell them that it's not the same as any of the examples on the board.



Then model for the children how they will present their riddles. Hold your paper so it is folded and the children can only see the number 11. Call on a child to guess what word equation you may have written. If the child's guess is correct, open your paper and show it to the class. If not, record the child's guess by writing two equations on the board. Repeat. If a third child doesn't guess correctly, then reveal what you wrote.

Write and Present Riddles

Now have children each write a riddle. Either direct them to choose a number between 10 and 20, or between 10 and 100, whichever is more appropriate. Write these directions on the board:

1. Fold your paper.
2. Pick a number and write it on the outside.
3. Write a word equation and a number equation inside.

Give enough time for each child to complete steps 1–3. Then choose a child to present as you did before with your riddle. Remind them that there can be up to three guesses. A child who guesses correctly comes up to present. If no one guesses, select another child to present. Collect the riddles and have two or three children present each day over the next several days.

Connect to Place Value

Show the children the cover of the book and ask them to think about why it shows 11. Represent 11 three ways:

$$11 = 1 \text{ crab} + 1 \text{ snail} \quad 11 = 1 \text{ ten} + 1 \text{ one} \quad 11 = 10 + 1$$

Ask, *What if the illustrator only drew crabs and snails? How would he show 15?* Write equations on the board:

$$15 = 1 \text{ crab} + 5 \text{ snails} \quad 15 = 1 \text{ ten} + 5 \text{ ones} \quad 15 = 10 + 5$$

Repeat with 23 and 57.

$$\begin{array}{lll} 23 = 2 \text{ crabs and } 3 \text{ snails} & 23 = 2 \text{ tens and } 3 \text{ ones} & 23 = 20 + 3 \\ 57 = 5 \text{ crabs and } 7 \text{ snails} & 57 = 5 \text{ tens and } 7 \text{ ones} & 57 = 50 + 7 \end{array}$$

Continue with other numbers to reinforce place value.

SUPPORTING INSTRUCTION

It may help to write expanded expressions for the number of feet. For example: for 5 people, write $2 + 2 + 2 + 2 + 2$ first and then 10. Also, for a simpler experience with numbers greater than 20, limit the numbers children choose for their riddles to multiples of 10—20, 30, 40, and so on—up to 100.

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
addition	adición
equation	ecuación
equals	es igual a
multiple	múltiplo
plus	más

Context Vocabulary

ENGLISH	SPANISH*
insect	insecto
riddle	adivinanza
spider	araña

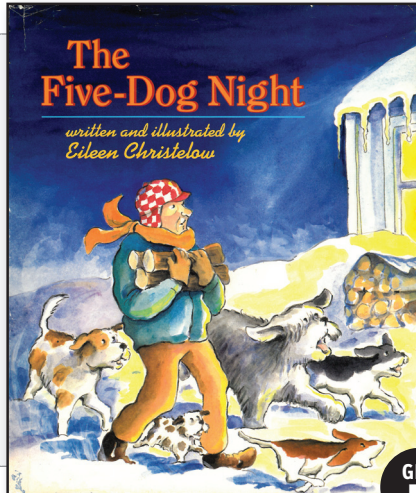
HOME CONNECTION

Ask children to figure out how many feet there are in their home and write two equations. For example, $4 \text{ people} + 1 \text{ dog} + 1 \text{ cat} = 16$ and $8 + 4 + 4 = 16$. Also, have children take home their riddles to share.

*Pointing out the Spanish cognates will help students make meaning-based connections.

The Five-Dog Night

Written and Illustrated by: **Eileen Christelow**



GRL
P

TOPICS

Multiplication

Problem Solving

Betty tries to give cranky old Ezra blankets for the cold winter nights. He tells her he has his own secret way of keeping warm—he uses his five dogs for extra blankets. He calls Betty a busybody and asks her to stop visiting. By spring Ezra is lonely, makes peace with Betty, and sees that she has found out his secret way of keeping warm by getting five dogs of her own. This humorous tale is a perfect springboard for introducing beginning concepts of multiplication.

Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Model with mathematics.

Standards for Mathematical Content

- Operations & Algebraic Thinking
- Geometry

Objectives

- Work with equal groups to build foundations for multiplication.
- Partition a rectangle into rows and columns of same-size squares and count to find the total number of squares.

Getting Started

Show the cover and read the title aloud. Explain that in Australia many years ago, dogs were used to help keep people warm while they slept. Say: *A really cold night was called a “Five-Dog Night.”* Read the book and then use the following lesson ideas in the order they appear.

LESSON IDEAS

Introduce Equal Groups

- Say: *Ezra and Betty each had a group of five dogs. How many dogs did they have in all?* (10) Explain: *We can write this two ways.* Write on the board: $5 + 5 = 10$ and $2 \times 5 = 10$. Say: *Let’s see what each number means in the equation with multiplication.* Label the equation as shown below.

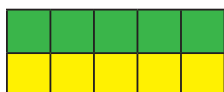
$$\begin{array}{ccccccc}
 2 & & \times & & 5 & & = & & 10 \\
 | & & & & | & & & & | \\
 \text{how many} & & & & \text{how many} & & & & \text{how many} \\
 \text{groups} & & & & \text{in each group} & & & & \text{in all}
 \end{array}$$

- Ask: *On a one-dog night, how many dogs would Ezra and Betty need on their beds?* (1 each or 2) Write on the board: $1 + 1 = 2$ and $2 \times 1 = 2$. Point to the equation with multiplication and ask the children to explain what each number means.
- Continue with the total number of dogs Ezra and Betty would need for a two-dog, three-dog, and four-dog night.

CONTINUE

Connect Equal Groups to Rectangular Arrays

- Show a 1-inch color tile to the class, and explain that the tile represents one dog. Ask: *How many dogs did Ezra have?* (5) Place five color tiles in a row. Ask: *How many dogs did Betty have?* (5) Place another five color tiles in a row. Ask: *How many groups of five do we have?* (2) *How can we write an equation with addition and an equation with multiplication?* ($5 + 5 = 10$ and $2 \times 5 = 10$) Write both equations on the board.



- Tell children that the two groups of 5 can be represented with grid paper. Cut a 2-by-5 rectangle from 1-inch grid paper. Post it on the board and write below it: $2 \times 5 = 10$.
- Point out that each row represents one group of five. Explain that the arrangement is called a rectangular array.
- Distribute 1-inch tiles. Ask: *What if it was a four-dog night? What about a three-dog night? A two-dog night? A one-dog night?* As children arrange the tiles and describe their arrays, cut out the appropriate rectangle. Post the rectangles on the board and label each rectangular array with the equation it represents.

Solve a Problem

- Have color tiles, 1-inch grid paper, and blank pieces of paper available. Pose the following problem: *Imagine you, Ezra, and Betty used dogs as blankets on a five-dog night. How many dogs would you, Ezra, and Betty have in all?* (15) Write on the board:

$$5 + 5 + 5 = 15 \quad 3 \times 5 = 15$$

- Point to the equation with multiplication and ask: *What does the 3 mean? (how many groups of dogs) What does the 5 mean? (how many dogs in each group) What does the 15 mean? (how many dogs in all)*
- Make a 3-by-5 array with tiles, then cut out a 3-by-5 rectangle from a piece of 1-inch grid paper. Say: *This shows how many dogs three people have on a five-dog night. The three of you have 15 dogs on a five-dog night.*
- Ask: *How many dogs would the three of you need for a four-dog night? A three-dog night? A two-dog night? A one-dog night?* Explain that for each night, they will make a rectangular array with the tiles, draw the array on grid paper, and cut it out. Say: *Paste the arrays on a blank piece of paper, then write two equations for each, one with addition and the other with multiplication.*

Find Equal Groups in the Real World

- Ask the children to brainstorm things that come in groups of two. Make suggestions such as eyes, bicycle wheels, chopsticks, and bird wings. Begin a class list. Then have children work in pairs and think of objects that come in 3s, 4s, and 5s.

SUPPORTING INSTRUCTION

When introducing multiplication, it is important to offer all children a broad view that goes beyond learning the times tables and computing with paper and pencil. This is especially important for struggling students. Use the lists of things that come in 2s, 3s, 4s, and 5s to create problems that children can solve mentally as well as with paper and pencil.

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
equal groups	<i>grupos iguales</i>
multiplication	<i>multiplicación</i>
rectangular array	<i>matriz rectangular</i>
total	<i>total</i>

Context Vocabulary

ENGLISH	SPANISH*
busybody	<i>cotilla</i>
loon	<i>colimbo</i>
pneumonia	<i>pulmonía</i>

HOME CONNECTION

Have children find things at home that come in equal groups. Have them make a list of things that come in groups of 2, 3, 4, and 5. Compile the children's findings into class lists that can be used later for solving multiplication problems.

*Pointing out Spanish cognates will help children make meaning-based connections.

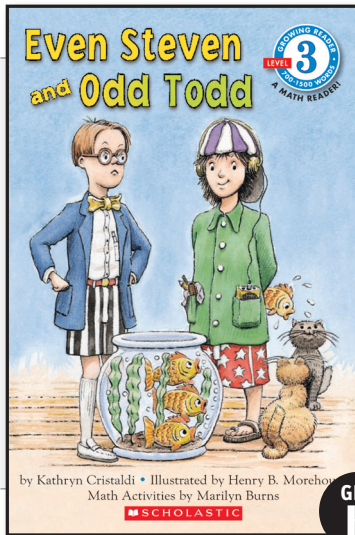
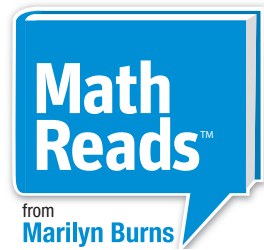
Grade 2

Even Steven and Odd Todd

Written by: **Kathryn Cristaldi**

Illustrated by: **Henry B. Morehouse**

 SCHOLASTIC



GRL
K

TOPICS

Addition & Subtraction

Odd & Even Numbers

Even Steven only likes even numbers. His cousin Odd Todd only likes odd numbers. When Todd comes to visit Steven, the cousins are in conflict until they win a garden contest together. This book provides a humorous context for learning about odd and even numbers, giving children many opportunities to explore mathematical patterns.

Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Standards for Mathematical Content

- Operations & Algebraic Thinking

Objectives

- Determine whether a group of objects has an odd or even number of members.
- Add and subtract mentally within 20.

Getting Started

Show the cover and read the title aloud. Use the four activities in the “Be a Number Checker” section at the back of the book. This will help children understand the mathematical meanings of odd and even, giving them the background they need to understand the humor of the story.

After completing the activities, explain to children that the mathematical meanings of odd and even are different from how we use odd and even in other contexts—odd can mean strange or different and even can mean smooth or level.

Say: *This book is about Even Steven, who only likes even numbers, and Odd Todd, who only likes odd numbers.* Read the book and then choose one or more of the following lesson ideas to do with the class.

LESSON IDEAS

Discuss the Book

- Ask children to think about the number of things both boys liked. Reread the first page. Ask: *What if the story had started with Odd Todd instead of Even Steven?* Read the page again and have children substitute odd numbers for the even numbers.
- Continue with other events from the story. Say: *Odd Todd knocked three times. What would Even Steven do? Even Steven got up at 8:00 a.m. and Odd Todd got up at 9:00 a.m. What is a possible bedtime for each of the boys?*

CONTINUE

Explore Odd and Even Patterns

- Give each child 10 counters. Explain: *A number is even when every counter has a partner.* Demonstrate by putting 10 counters in pairs. Have children use counters to explore the even and odd pattern of sums. Say: *Let's see what happens when we add two even numbers together.* Write on the board: $6 + 4 = 10$. Point to the sum and ask: *Is 10 odd or even?* (even) Have children use counters for other combinations of even addends. Ask: *When we add two even numbers, is the sum odd or even?* (even)
- Say: *Let's see what happens when we add two odd numbers together.* Write on the board: $5 + 3 = 8$. Point to the sum and ask: *Is 8 odd or even?* (even) Have children use counters to explore various combinations of odd addends. Ask: *Can you figure out why the sum is always even?* (Each addend has one counter without a partner. When you combine the addends, those counters make a pair.)
- Have children use their counters to investigate what happens when you add an odd and an even number.
- Introduce the even and odd pattern in subtraction. Say: *Let's see what happens when we subtract odd numbers and even numbers.* Write on the board: $6 - 5 = 1$. Point to the 1 and ask: *Is 1 odd or even?* (odd) Have children use their counters to explore the pattern in other subtraction problems. Ask: *When we start with an even number and subtract an odd number, is the answer odd or even?* (odd)
- Say: *Let's see what happens when we subtract an even number from an odd number.* Write on the board: $9 - 4 = 5$. Point to the 5 and ask: *Is 5 odd or even?* (odd) Have children use their counters to explore the pattern with other combinations. Ask: *If we start with an odd number and subtract an even number, is the answer odd or even?* (odd)
- Ask children to use their counters to investigate what happens when subtracting two odd numbers and two even numbers.

Play Odd and Even Games

- Introduce the games below and have children play in pairs.
 - ▶ **Game #1:** One player is Odd Todd and the other is Even Steven. Players take turns rolling two dice and figuring out the sum of the numbers rolled. If the sum is an odd number, Odd Todd gets a point. If the sum is an even number, Even Steven gets a point. Play for ten rounds, switch roles, and then play for another ten rounds.
 - ▶ **Game #2:** Two players take turns rolling three dice to figure out the sum of the three numbers. Before rolling, the player calls out "odd" or "even." If the player's sum matches the call, he or she gets a point. If it doesn't match, the other player gets a point. Play for ten rounds.

Make a List for Odd and Even Storybooks

- Have children work in pairs to brainstorm a list of things that Even Steven would like and a list of things Odd Todd would like.
- Combine the ideas into class lists. Have the children use the class lists for story ideas and write a new adventure for Even Steven and Odd Todd.

SUPPORTING INSTRUCTION

Have children use concrete materials to investigate whether numbers are odd or even. Working extensively with numbers less than 20 helps them to later apply their understanding to greater numbers.

Vocabulary

Math Vocabulary

ENGLISH	SPANISH*
even	par
odd	impar
pattern	patrón
sum	suma

Context Vocabulary

ENGLISH	SPANISH*
double-dip	de doble caída
knock	golpear

HOME CONNECTION

Have children look at home for odd and even numbers of people or objects. Possibilities include the number of people in their families, the number of rooms in their homes, or the number of pets.

*Pointing out Spanish cognates will help children make meaning-based connections.