

# Balls Study: Table of Contents

Get started by reviewing the Table of Contents in the *Teaching Guide*.

The highlighted text indicates the sample resources found in this *Touring Guide*. The *Teaching Guide* provides all the information needed to go step-by-step and day-by-day through the entire study: background information to get started, preparatory resources to help begin the study and explore the topic, daily guidance for investigations, and suggestions on how to celebrate and close the experience.

## Table of Contents



### Getting Started

- 3 Why Investigate Balls?
- 4 Web of Investigations
- 6 A Letter to Families

### Beginning the Study

- 10 Introducing the Topic
- 11 Preparing for Wow! Experiences
- 12 Exploring the Topic (Days 1–5)

### Investigating the Topic

- 26 Investigation 1: Do all balls bounce? (Days 1–3)
- 34 Investigation 2: Do all balls roll? (Days 1–3)
- 42 Investigation 3: What makes balls move? (Days 1–2)
- 48 Investigation 4: Who uses balls? (Days 1–5)
- 60 Investigation 5: What are balls made of? (Days 1–5)
- 72 Additional Questions to Investigate
- 74 Our Investigation



### Celebrating Learning

- 81 Closing the Study
- 82 Celebrating Learning (Days 1–2)
- 88 Reflecting on the Study

### Resources

- 91 Background Information for Teachers
- 92 Children's Books
- 93 Teacher Resources
- 94 What's Planning Form



# Why Investigate Balls?

At the start of every study is a “Why Investigate...?” section that provides context.

All the study topics in *The Creative Curriculum® for Preschool*—such as balls, trees, and buildings—are topics that already interest children and are familiar and fascinating to them. This is one of the major distinguishing features of *The Creative Curriculum® for Preschool*: The study topics are relevant to—rather than removed from—the everyday lives of children. The studies involve children in hands-on exploration, problem solving, and communication.

## The Balls Study Getting Started

### Why Investigate Balls?

Children love balls. They play with them in many different ways. They throw them, catch them, kick them, and roll them with seemingly endless delight. Children learn how natural forces, such as gravity and friction, affect the movement of balls, and they enjoy making balls, marbles, and other rolling objects change speed and direction. The universal and enduring appeal of balls is evident in the traditional games children play with them and in the ways they invent their own ball games.

This study shows how to use children's interest in balls to help them explore social studies and science concepts related to the features and nature of balls, and to use skills in literacy, math, technology, and the arts as they investigate.

**How do the children in your room show their interest in balls? What do they say about balls?**





# Web of Investigations

A “Web of Investigations” is also included at the beginning of every study.

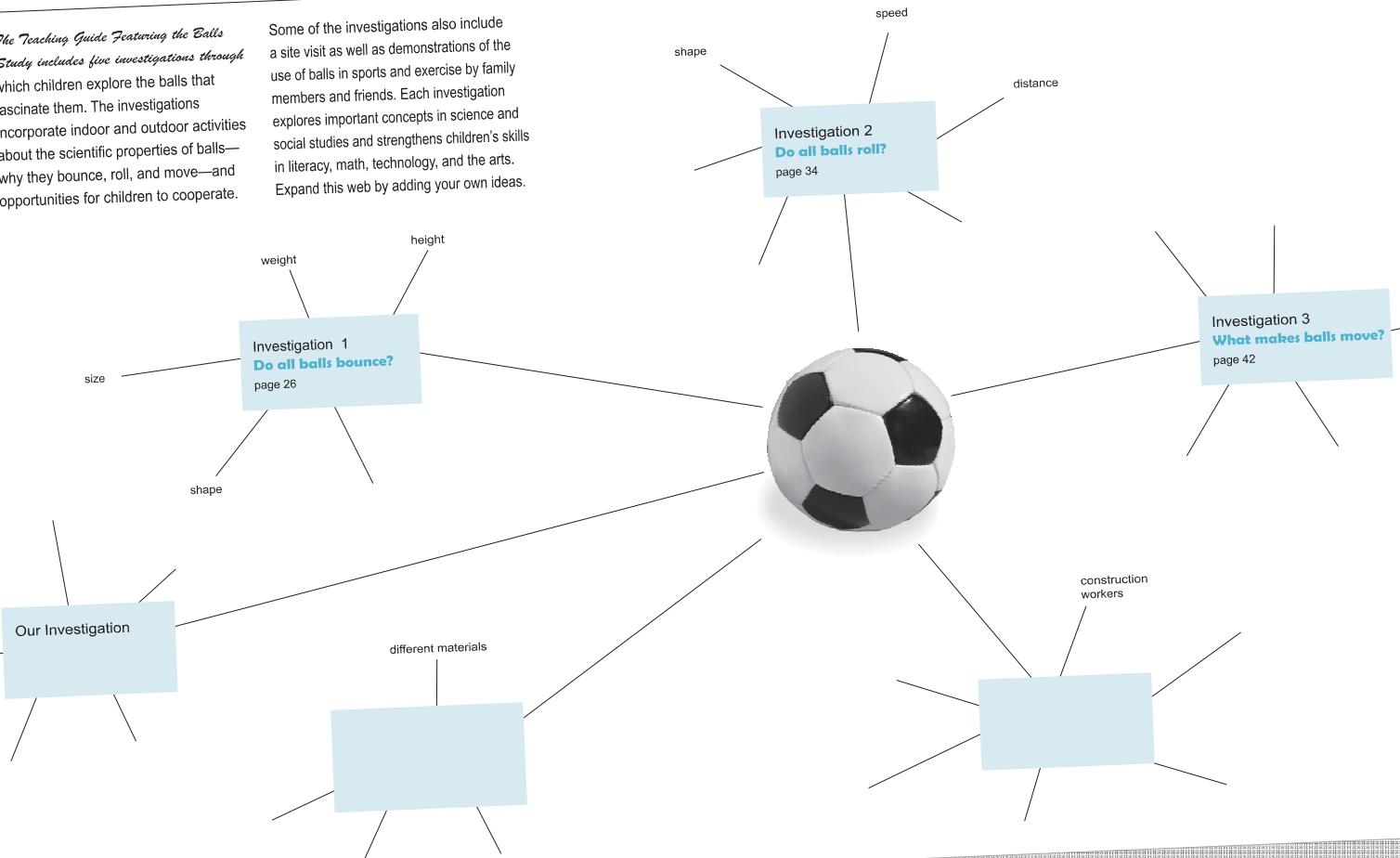
This section introduces the concept of an **idea web**, a way to think about the important ideas related to a topic and the areas that children might explore. Each study includes a preliminary idea web that has extra space for teachers to record their own ideas.

In this way, teachers can adapt the *Teaching Guide* to the resources that are available in the community and the particular learning they want to emphasize.

## Investigations

*The Teaching Guide Featuring the Balls Study includes five investigations through which children explore the balls that fascinate them. The investigations incorporate indoor and outdoor activities about the scientific properties of balls—why they bounce, roll, and move—and opportunities for children to cooperate.*

Some of the investigations also include a site visit as well as demonstrations of the use of balls in sports and exercise by family members and friends. Each investigation explores important concepts in science and social studies and strengthens children’s skills in literacy, math, technology, and the arts. Expand this web by adding your own ideas.



# Putting It Into Practice

Here's an example of one teacher's idea web.

Notice how she begins with the study topic—balls—and branches out to identify many areas of exploration that interest the children in her classroom. From the idea web, this teacher and her class are able to identify what they already know about balls. Then they identify the questions they want to answer.



We've been wondering.....

Cubs

Let's find out!

- Do all balls roll?
- Can all the balls bounce?
- What can we do with balls?
- We can find other kinds of balls?
- What is inside of balls?
- Why are some balls flat?

What do we know about balls?	What do we want to find out about balls?
We can play with balls. -Kyla	How high can balls bounce? -Amy
We can throw balls. -Reggie	Which balls are heavy and light? -Kyla
Balls bounce and squeak. -Elliot	How can we balance a ball on our head? -Eryn
Balls roll. -Ranna	How can balls roll? -Henry
We can shoot balls into a goal. -Amy	Can we make a ball? -Rowan
Balls are tough. -Henry	Are some balls different shapes? -Elliot



# At a Glance, Investigation 1

## Next Step: Plan and Prepare

The “At a Glance” pages that precede every exploration and investigation help teachers with planning. They provide a bird’s-eye view of what the next few days will look like.

The number of days the teacher sees on the “At a Glance” chart will vary according to the question(s) being investigated and how involved children become.

### Questions for Exploration or Investigation—

In addition to children’s own questions, these preselected questions actively involve children in the topic they are studying. Children explore them by engaging in hands-on experiences that enable them to practice important investigatory skills.

### Question of the Day—

As part of the morning arrival routine and with help from the teacher or a family member, children answer a question related to something planned for that day.

**Materials—**The “At a Glance” chart shows all the materials and books the teacher needs to gather for each day of the investigation.

### Children’s Literature—

During each study, the teacher uses both fiction and nonfiction books from the *Teaching Strategies® Children’s Book Collection*. The nonfiction titles relate closely to the study topic.

AT A GLANCE		Investigation 1	
<p><b>Do all balls bounce?</b></p> <p><b>Vocabulary—English:</b> <i>circumference, length, shorter, longer, sphere</i></p>			
		Day 1	Day 2
Interest Areas		<p>Toys and Games: sorting trays; a variety of small balls</p> <p>Technology: eBook version of <i>The Three Billy Goats Gruff</i></p>	<p>Toys and Games: sorting trays; a variety of small balls and circles</p>
Question of the Day		Do you think all balls bounce?	Is your head bigger or smaller than this ball?
Large Group		<p>Movement: The Imaginary Ball</p> <p>Discussion and Shared Writing: Which Balls Will Bounce?</p> <p>Materials: Mighty Minutes 41, “The Imaginary Ball”; ball collection; numeral cards; digital camera; <i>Play Ball</i></p>	<p>Movement: The Imaginary Ball</p> <p>Discussion and Shared Writing: Height and Bounciness</p> <p>Materials: Mighty Minutes 15, “Say It, Show It”; ball collection</p>
Read-Aloud		<p><i>The Three Billy Goats Gruff</i></p> <p>Book Discussion Card 06 (first read-aloud)</p>	<i>Bounce</i>
Small Group		<p>Option 1: Rhymes With <i>Ball</i></p> <p>Intentional Teaching Card LL10, “Rhyming Chart”; poem or song with rhyming words; prop that illustrates poem or song</p> <p>Option 2: Rhyming Zoo</p> <p>Intentional Teaching Card LL14, “Did You Ever See...?”; pictures of familiar animals; audio recorder</p>	<p>Option 1: The Long and Short of It</p> <p>Intentional Teaching Card M25, “The Long and Short of It”; ribbons of equal width, cut into different lengths</p> <p>Option 2: How Big Around?</p> <p>Intentional Teaching Card M62, “How Big Around?”; a variety of circular objects; ball of yarn or string; scissors</p>
Mighty Minutes®		Mighty Minutes 30, “Bounce, Bounce, Bounce”	Mighty Minutes 33, “Thumbs Up”; two items with the same initial sound



Spanish: *circunferencia, longitud, más corto, más largo, esfera*

Day 3

Make Time for...

Activities and Games: add spheres and circles to sort

Technology: eBook version of *The Three Billy Goats Gruff*

Do heavy balls bounce?

Song: Clap a Friends Name

Discussion and Shared Writing: Weight and Bounciness

Materials: Mighty Minutes 40, "Clap a Friend's Name"; ball collection

*The Three Billy Goats Gruff*

Book Discussion Card 06 (second read-aloud)

Option 1: Letters, Letters, Letters

Intentional Teaching Card LL07, "Letters, Letters, Letters"; alphabet rubber stamps; colored inkpads; construction paper

Option 2: Buried Treasures

Intentional Teaching Card LL21, "Buried Treasures"; magnetic letters; large magnet; ruler; tape; sand table with sand

Mighty Minutes 37, "Little Ball"; ball

Outdoor Experiences

Bouncing Balls

- Test balls outside to see which balls bounce the highest. Invite the children to make predictions and test them.
- Invite the children to test how balls bounce on different surfaces, e.g., rocks, sand, grass, and concrete.
- If possible, have children test the balls by dropping them from various heights, e.g., slide, steps, and climber.

Physical Fun

- Use Intentional Teaching Card P05, "Throw Hard, Throw Far," and follow the guidance on the card.

Family Partnerships

- Send home a note to families encouraging them to talk with their children about their favorite childhood ball games.

Outdoor Experiences—

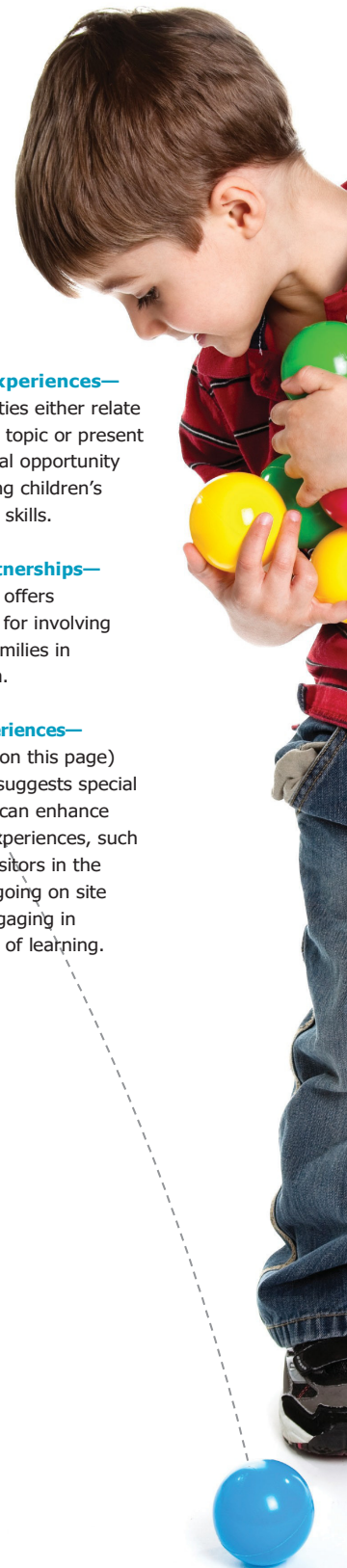
These activities either relate to the study topic or present an intentional opportunity for promoting children's gross motor skills.

Family Partnerships—

This section offers suggestions for involving children's families in the program.

WOW! Experiences—

(not shown on this page) Each study suggests special events that can enhance children's experiences, such as having visitors in the classroom, going on site visits, or engaging in celebrations of learning.



# Day 1, Investigation 1

Each *Teaching Guide* contains the day-by-day, step-by-step guidance that helps teachers implement each study.

Notice that guidance for using the additional resources, such as *Intentional Teaching Cards™* and *Book Discussion Cards™*, is included throughout every daily plan.

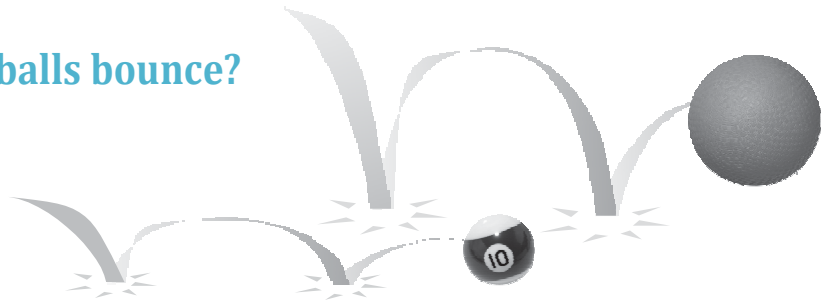
An important feature of *The Creative Curriculum® for Preschool* is that the daily plans offer a structure, not a script. As children raise questions about a topic, the teacher can adapt the plans to follow children's interests. The curriculum combines the flexibility many teachers want with the assurance that they're still meeting their state and Head Start early learning standards.



## Day 1

## Investigation 1

### Do all balls bounce?



#### Vocabulary

**English:** See *Book Discussion Card 06, The Three Billy Goats Gruff (Los tres cabritos)* for words.

**Question of the Day:** Do you think all balls bounce?

#### Large Group

##### Opening Routine

- Sing a welcome song and talk about who's here.

##### Movement: The Imaginary Ball

- Read *Play Ball*.
- Review *Mighty Minutes 41, "The Imaginary Ball."* Follow the guidance on the card using the numeral card variation.

An important concept in movement experiences is *body awareness*. This activity helps children explore what their bodies can do.

##### Discussion and Shared Writing: Which Balls Will Bounce?

- Gather the collection of balls.
- Ask, "Do all balls bounce? I wonder which ones bounce best. Let's find out."
- Hold up each ball and ask, "Do you think this ball will bounce well?"

- Record children's predictions about which balls will bounce, and create two groups: balls they think will bounce and balls they think will not bounce. Let each child test a prediction. Be sure to include some balls that won't bounce and others that don't bounce well, e.g., cotton ball, orange, or football. After testing each ball, have the children resort the balls. (They may want more than two categories.) Take photos of children testing their predictions and the sets of sorted balls. Call attention to the football and wonder aloud why it didn't bounce like the others. Reintroduce the term *sphere* to describe balls and point out that the football is not a sphere.

- Say, "I wonder which balls bounce the highest and why some bounce higher than others. During outdoor time today and tomorrow, we can try to find out."

Before transitioning to interest areas, talk about the sorting trays and small ball collections in the Toys and Games area and how children can use them.



**The Balls Study** Investigating the Topic

**Choice Time**

As you interact with children in the interest areas, make time to

- Observe children as they sort the balls in the Toys and Games area.

Instead of praising children by saying, “Good job,” encourage children by explaining exactly what they are doing that is appropriate and noteworthy. For more information on this topic see Intentional Teaching Card SE18, “Encouragement.”

- Describe what you see children doing, e.g., “You put all the smooth balls in this section and all the bumpy balls in that section.”
- Ask, “Can you think of another way to sort the balls?”
- Record what children say and do.

**Support for English- and dual-language acquisition—**

Guidance to help teachers support the English- and dual-language learners in their classrooms is embedded throughout the *Teaching Guides*.

**Book Discussion Cards™—**

The *Book Discussion Card™* supports teachers during read-alouds. See pages 42-43 to review *Book Discussion Card™* 06, “Billy Goat’s Gruff.”

**Intentional Teaching Cards™—**

Prompts to use particular *Intentional Teaching Cards™* are included in every daily plan. See pages 44-46 to examine three *Intentional Teaching Cards™*.

**Reference to Vol. 6 —**

The *Teaching Guide* prompts teachers to refer to this knowledge-building volume for more detailed information. See pages 48-49 for this excerpt.

**Mighty Minutes®—**

Teachers are directed to *Mighty Minutes®* activities during each day of the study. Refer to page 47 to review the *Mighty Minutes®* that are suggested for Day 1, Investigation 1 of the *Balls Study*.

**Read-Aloud**

Read *The Three Billy Goats Gruff*.

- Use Book Discussion Card 06, *The Three Billy Goats Gruff*. Follow the guidance for the first read-aloud.
- Tell children that the book will be available to them on the computer in the Technology area.

**English-language learners**

After the reading, retell the story in your own words with gestures. Point to illustrations or objects in the room, as appropriate. This strategy helps children understand the story and learn new vocabulary.

**Small Group**

**Option 1: Rhymes With Ball**

- Review Intentional Teaching Card LL10, “Rhyming Chart.”
- Follow the guidance on the card using the word *ball*.

**Option 2: Rhyming Zoo**

- Review Intentional Teaching Card LL14, “Did You Ever See...?” Follow the guidance on the card.

For more information on supporting children’s phonological awareness, see *Volume 6: Objectives for Development & Learning*.

**Mighty Minutes®**

- Use Mighty Minutes 30, “Bounce, Bounce, Bounce.” Follow the guidance on the card.

**Large-Group Roundup**

- Recall the day’s events.
- Show the rhyming chart you made during small-group time. Invite the children to recall rhyming words.



# Day 1, Investigation 1

## Book Discussion Card™ 06, “Billy Goats Gruff”

During Day 1, Investigation 1 of the *Balls Study*, teachers are directed to *Book Discussion Card™ 06*, “The Three Billy Goats Gruff.”

**Objective 18** Comprehends and responds to books and other texts  
 a. Interacts during reading experiences, book conversations, and text reflections

Related Objectives: 1a, 3b, 8a, 9a, 15b, 22a, 32

### Vocabulary

**valley**  
land in between mountains or hills that often has a river or stream running through it

**boulder**  
a very big, heavy rock

**hooves**  
(point to illustration) the hard covering

**nubs**  
small bumps or lumps

**skin and bones**  
very, very skinny

**hideous**  
very, very ugly

**planks**

**trembled**  
(demonstrate movement) shook

**gulp**  
(exaggerate motion) a big swallow

**wobbled**  
didn't stand very steadily

**stomped**

### 1 First Read-Aloud

#### Before Reading

Introduce characters and the problem.  
 “This book is called *The Three Billy Goats Gruff*. Three billy goats named Gruff have eaten all the grass in their valley. There's more grass to eat on the other side of the river. But to get there, they have to cross a bridge—a bridge that is home to a hungry troll. Can the three billy goats figure out how to cross the bridge without getting eaten? Lets find out.”

#### While Reading

Expand vocabulary by pointing to pictures, using gestures to dramatize, and describing:

*valley, boulder, hooves, nervous, nubs, skin and bones, hideous, planks, trembled, gulp, wobbled, stomped*

**Comment on main characters' thoughts and actions.**

- “Middle Billy Goat Gruff looks nervous and worried about not having enough to eat.”
- “I wonder how Little Billy Goat Gruff plans to get all three of them past the troll.”
- “I think Little Billy Goat Gruff's plan is very smart. He's tricking the troll into not eating him and his brothers. I wonder what Big Billy Goat Gruff will do when he meets the troll.”
- “Little Billy Goat Gruff's plan worked. Each Billy Goat Gruff played an important part in the plan.”

#### After Reading

Invite explanations, wonder aloud, and ask follow-up questions.

- “Why do you think Little Billy Goat Gruff's plan worked? Do you think he knew he could trick the troll?”
- “What do you think Middle or Big Billy Goat Gruff's plan would have been? What would you have done to get past the troll?”

### 2 Second Read-Aloud

#### Before Reading

Recall the characters and the problem.

“We're going to read *The Three Billy Goats Gruff* again. You may remember that this is a story about three billy goat brothers who have to cross a bridge where a hungry troll lives. Why do the billy goats have to get across the bridge? How do they get past the troll?”

#### While Reading

Expand vocabulary using more verbal explanations:

*hooves, nubs, stomped*

**Reinforce some previously introduced words by pointing to pictures and dramatizing:**

*valley, hideous, gulp*

**Comment on and ask follow-up questions about the other characters.**

- “Why do you think the troll let the first two Billy Goats Gruff cross the bridge? I don't think anyone has ever tricked him before, so he must not be worried about whether he'll catch and eat the billy goats.”
- “What do you think the troll thought when Big Billy Goat Gruff charged at him? I think no one had ever tried doing that to him before.”

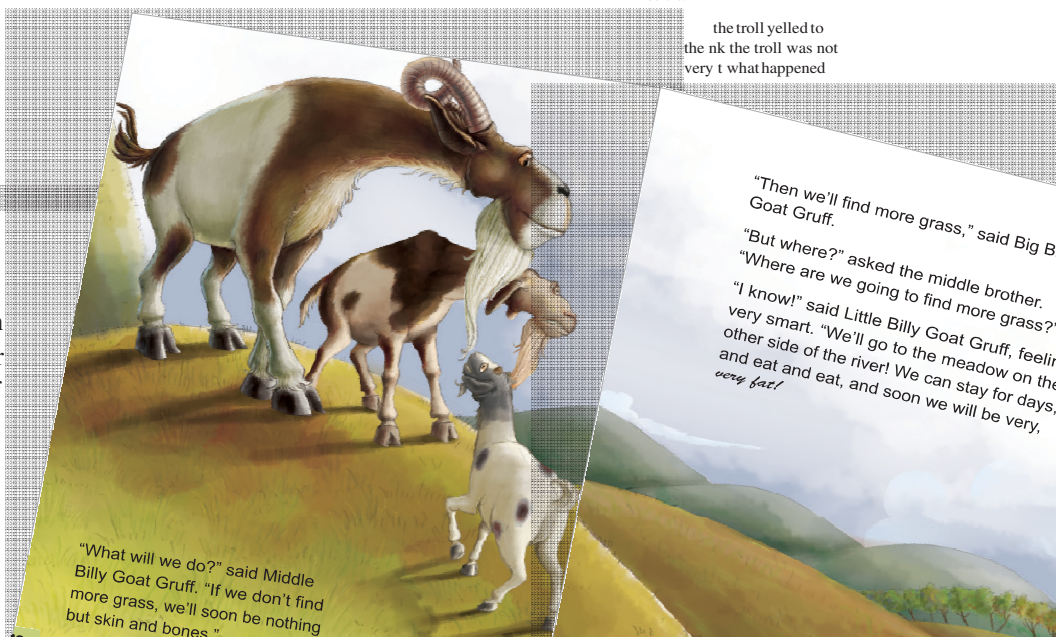
the troll yelled to the nubs the troll was not very t what happened

#### 1. First Read-Aloud

During the first read-aloud, teachers focus on the characters' thoughts and actions: “I wonder how Little Billy Goat plans to get all three of them past the troll.”

#### 2. Second Read-Aloud

During the second read-aloud, teachers comment on and ask questions about the other characters: “Why do you think the troll let the first two Billy Goats Gruff



Supporting Social-Emotional Development

Feelings (1a)

How would you feel and act if you were very big?  
 How would you feel and act if you were in the middle and had a troll bigger or smaller than you, and how would you feel?  
 Think about a time when you

Solves social problems (3b)

- “Little Billy Goat Gruff thought of a plan to get across the bridge, but all three billy goats had to work together to make the plan work. What problems have you solved by working with a friend?”

Third Read-Aloud

Reading

Encourage children to recall the story and solution.  
 Encourage children to read a story that we’ve read many times before. Can anyone remember the name of this book? What problems do the Billy Goats solve? How do they solve the problems?”

While Reading

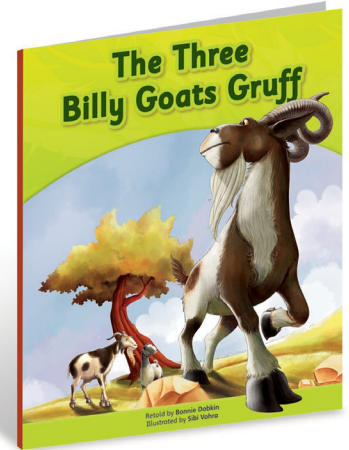
**Expand vocabulary:**  
*trembled, wobbled, stomped*  
**Guide children to reconstruct the story as you turn the pages.**  
 Read a few pages and allow the children to reconstruct parts of the story. Occasionally ask questions such as “What is happening here?” or “What happens next?” that help children recall the events of the story. Encourage children to explain what characters are thinking and feeling.

After Reading

- Wonder aloud and ask follow-up questions.**
- “Did the Billy Goats Gruff have to cross the bridge to get to the meadow? What else could they have done to get across the river?”
  - “I wonder what happened to the troll after the rushing waters carried him away. Do you think he found another bridge to live under and went back to eating anyone who tried to cross his bridge?”
  - “I wonder what the three Billy Goats Gruff will do the next time they

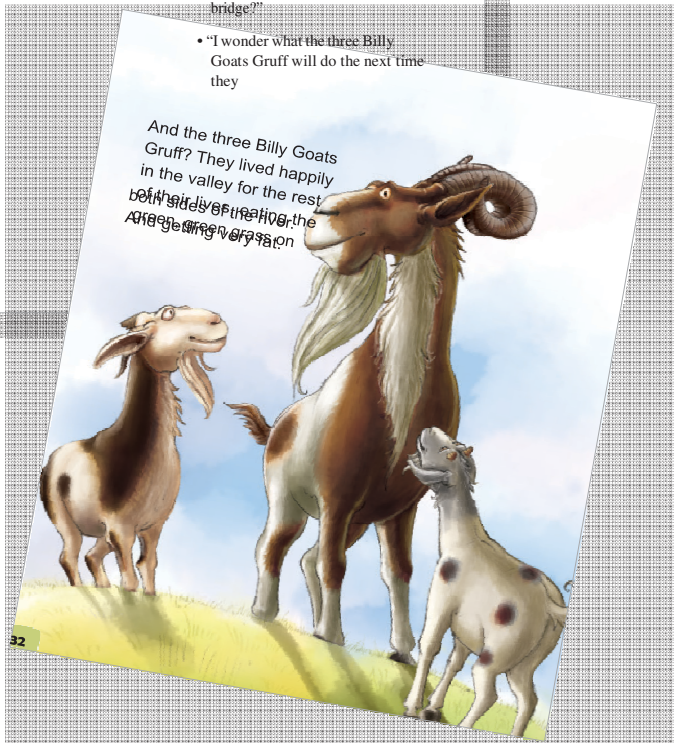
The Three Billy Goats Gruff

Retold by Bonnie Dobkin



Facing a shortage of food, three billy goat brothers must cross a bridge to get to a meadow of fresh grass. But the journey is dangerous—there’s a disgusting troll living under the bridge who is hungry and quite eager for a tasty goat supper. Can the brothers outsmart the

treacherous troll who stands between them and their next meal? Let’s find out!



3. Third Read-Aloud

During the third read-aloud, teachers help children reconstruct the story themselves: “What is happening here?” “What happens next?”